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Talia Macauley
tmacauley@fordham.edu

Environmental Studies
Fordham University, fordham.envstudies@gmail.com

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Climate and Crisis: Environmental Degradation and Humanitarian Disaster in Darfur

Talia Macauley
Environmental Policy
Fordham University '16

Abstract

As one of the largest humanitarian conflicts in the world, the situation in Darfur, Sudan continues to be characterized by a growing ethnically driven conflict, by a persistent number of displaced persons, and most importantly—at least for the sake of this thesis—by a widespread and significant number of environmental issues. While the former two characteristics seem to be at the forefront of humanitarian assistance programs, the latter is severely lacking in both acknowledgement and incorporation by the aid sector. In an effort to make apparent the need to incorporate environmental issues into humanitarian projects, this thesis uses the United Nations Environment Program's 2006 country report on Sudan to assess the current quantitative state of the environment in Sudan while simultaneously using their 2011 Country Evaluation Report of Sudan to assess the current numbers on displacement and assistance present in the country. Using a historical recap of Darfur's environment, alongside a political analysis of land use in the region, and an assessment of humanitarian organizations present in Darfur, this thesis places the environment at the center of this conflict while also calling for it to be at the center of any proposed solutions. The current data and history of the environment, the environmental aspects of the political situation in Darfur, and the lack of environmental impact by aid organizations is used to assert the notion that increased environmental programming is necessary in Sudan if the conflict and its aftermath are to truly move towards mitigation. Based on this finding, the final section of this thesis suggests a policy for long standing aid actors in Darfur that will ensure an interest in the environment and in the mainstreaming of environmental issues as a driver of conflict and thus as essential to any effective solutions.

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Introduction: Why Darfur?

One of the largest humanitarian conflicts in our history continues to subsist in Darfur, Sudan. Darfur has a long history of conflict and environmental degradation—for this reason, the focus of this thesis will be on the intersection of these two phenomena. This long history of mostly contained and local conflicts escalated quickly in late 2002 into a “full scale military confrontation in all three Darfur states”¹. As the Sudan Liberation Army (SLA) and the Justice and Equality Movement (JEM) announced and committed to a clear opposition to Sudanese government and administration, a full-fledged insurgency proceeded in a series of attacks against the government. By 2003, a counter insurgency was launched as the government pursued three groups labeled as responsible for the initial insurgency—the Fur, The Masalit, and the Zaghawa². The result of this discriminate campaign led to a disaster in the form of “a significant number of civilian deaths, the widespread destruction of villages and forests, and the displacement of victims into camps for protection, food and water³”. There was a peace agreement signed in Darfur in 2006 but it did little to decrease violence as only one rebel group agreed to sign onto the agreement. In 2011, the Doha Document for Peace in Darfur was finalized but also lacked the signing of all major rebel factions in the region. Resultantly, violence did see a decrease in Darfur but did not cease completely⁴. The aftermath now leaves over two million people displaced—a number that has burdened far from lightly on both the humanitarian community as well as the environment. The mass executions and attacks against the three above mentioned groups quickly led western media to shape this conflict into one characterized as nothing short of an “ethnic cleansing battle” as Sudan’s Omar “Al-Bashir masterminded and implemented a plan

¹ Sidahmed, Abdel Salam., Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of*

² Ibid, 18.

³ *Sudan: Post-Conflict Environmental Assessment*. (Nairobi, Kenya: United Nations Environment Programme, 2007), 75.

⁴ Bennett, John, Abu El Gasim Amir Abu Diek, and Ali Jammaa Abdalla. *UNEP Republic of the Sudan Country Programme Evaluation*. Report. March 2013. Accessed March 2016. (12).

to destroy in substantial part the Fur, the Masalit, and the Zaghawa groups, on account of their ethnicity⁵”. That being said, this conflict also has strong linkages to a number of other factors. Environmental degradation in the region and resulting agricultural patterns are undoubtedly included as key contributing actors. This thesis will not only assess the role of land and environmental degradation in exacerbating this conflict but also its inverse in regards to the way in which the conflict has contributed to further harm on the environment it has taken place within. More importantly however, this thesis will examine the lack of acknowledgement, funding, and program attention the greater part of the humanitarian aid sector has given to the environmental problems that have not only contributed to the conflict but that have continued to exacerbate much of its aftermath.

Chapter one of this thesis will assess and provide quantitative data of the current environmental and humanitarian state and situations in Darfur. This will include but is not limited to, the climate variation within the region, rainfall, vegetation and land use patterns, numbers of displaced persons, and amount of aid in country. The primary sources included in this section are the 2006 United Nations Environment Program’s (UNEP) report and Osman Suliman’s chapter on ‘Ecology and Environmental Degradation’ in *The Darfur Conflict*. Chapter two will further breakdown the environmental state of Sudan, focusing on Darfur as a region, through an assessment of its environmental history. Similarly to chapter one, chapter two will also take rainfall, drought, and agricultural patterns into account but will do so more qualitatively rather than quantitatively. Sources used here include excerpts from *The Responsibility to Protect in Darfur*, as well as several chapters in Osman Suliman’s *The Darfur Conflict: Geography or*

⁵ Sidahmed, Abdel Salam., Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of Mass Media*. (Lanham, MD: Lexington Books, 2010), 17.

Institutions. Land politics play a critical role in the development of both land use patterns as well as sources of conflict. For this reason, chapter three will examine the political role Darfur's many tribes, and their livelihood patterns, play within the changing environment around them and how that role has contributed to the conflict that has displaced so many. Molly Miller's *The Crisis in Darfur* as well as Suliman's *The Darfur Conflict: Geography or Institutions?* and their detailed coverage of the region's ethnic and tribal groups, are utilized as the main focus of this chapter. Chapter four will shift its focus away from the sources of and contributors of the conflict and more towards its aftermath and response—mainly being in an assessment of the humanitarian aid community's role within a disaster so closely linked to the environment. Using data from the UNEP report on Sudan, as well as a discourse analysis of literature from UNICEF—a key player in aid delivery in Sudan—this chapter will implicate the aid community's contribution to exacerbating already existing environmental problems. It will also highlight the aid sector's somewhat blatant disregard for the deteriorating environment in Darfur and the necessary incorporation of environmental solutions as they try to mitigate the suffering of and reintegrate the vast number of persons left hungry, deprived, and displaced by this conflict. Drawing on the United Nations 2030 Agenda for Sustainable Development, and chapters on humanitarianism within the 2006 UNEP report, a policy recommendation will be made in chapter five. This chapter recommends a policy that will mandate aid organizations on the ground in Darfur to not only acknowledge the environment as part of a solution but also to incorporate some kind of concrete environmental projects within their programming. In sum, the purpose of this thesis will be to problematize the conflict in Darfur beyond the confines of a 'simple' battle of ethnic cleansing of a corrupt government—it is to highlight the disparity in acknowledgement between

a long history of environmental degradation and a long history of violence, and it is to urge the incorporation of environmentally focused solutions amongst the aid sector.

Chapter One: Running the Numbers on Land and in Camps: A Quantitative Assessment of the Current Environmental State and Displaced Persons in Darfur

It is important to note that in this chapter some data may be general to all of Sudan rather than Darfur as a region alone—the environmental sector in Sudan has been limited in its provision of quantitative data and is mostly qualitative in its reports due to a lack of technology, willingness, and ability to invest the proper resources to generate significant and thorough data. That being said, the region of Darfur is divided into three states; North, South, and West Darfur. Together they comprise a landlocked area on the western side of Sudan of about 250,000 square kilometers with a population of about 6 million people⁶. Climate in Sudan, as well as in Darfur, is extremely diverse due to its variation in rainfall across the region and its crossing over 18 degrees of latitude⁷. The North, bordered by arid deserts, ranges from zero to 200 millimeters in rainfall whereas the far south averages at about 800 millimeters⁸ and has a very short dry season. The 80,000 square kilometers Marra Plateau occupies Central Darfur at an elevation of 3,088 meters⁹. Similarly to the southern parts of Darfur, the higher and more southern parts of the plateau have a much wetter microclimate than the surrounding dry arid lands with over 600mm of rainfall per year. This rain allowed for extensive woodlands to grow in the area that have since been removed¹⁰. Removal is far from uncommon in much of Darfur as deforestation has

⁶ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* New York: Routledge, 2011.29.

⁷ *Sudan: Post-Conflict Environmental Assessment*, 38.

⁸ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 89.

⁹ *Sudan: Post-Conflict Environmental Assessment*, 51.

¹⁰ Ibid.

presented as a clear and significant problem in the region. Several regions in Darfur are undergoing deforestation and subsequently desertification at a substantial rate. The resulting situation is in the form of highly uneven distribution of wood and forest resources between the North, South, and Western states but also between the groups within them. “According to the Forests National Corporation (FNC), only 32 percent of the forest is located in the north of Sudan, with 68 percent in the south¹¹”.

Increasing rates of deforestation can be attributed to Sudan’s dependence on timber/wood for many aspects of its people’s livelihoods—wood is utilized and sold, for fuel, building, and industry.

“Deforestation in Sudan is estimated to be occurring at a rate of over 0.84 percent per annum at the national level, and 1.87 percent per annum in UNEP case study areas. It is driven principally by energy needs and agricultural clearance. Between 1990 and 2005, the country lost 11.6 percent of its forest cover, or approximately 8,835,000 hectares. At the regional level, two-thirds of the forests in north, central and eastern Sudan disappeared between 1972 and 2001¹².”

Much of this high dependence on wood for fuel is becoming increasingly problematic in Darfur, specifically in refugee and IDP camps where they rely heavily and almost entirely on wood supply for fuel. The FNS estimated an annual per capita consumption of about 1.9 cubic meters as of 1995—with the estimated fuel wood requirement shifting dramatically from 40 million cubic meters to 50 and 76 cubic meters between 1980 and 2006 respectively¹³. A UNEP study showed that by 2006 almost one third of Darfur had been completely subject to deforestation. 29.4 percent of Jebel Marra in Western Darfur changed from closed forest to open forest and

¹¹ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 29.

¹² *Sudan: Post-Conflict Environmental Assessment*, 40

¹³ *Ibid*, 30.

burnt areas by 2006; Timbisquo, Southern Darfur saw a 29.1 percent loss of closed forest and wooded grassland to burnt areas and rain fed agriculture, and Um Chelluta, also in Southern Darfur, saw a 32.4 percent loss in closed forest to be replaced by burnt areas, pasture, and rain fed agriculture. Such rapid deforestation has not only put significant strain on fuel supply in the region but has also left an increased margin for crop failure with the inconsistency of successful rain fed agriculture as a result of sporadic droughts and limited rainfall.

Such sporadic rainfall in conjunction with a number of limited resources makes agriculture difficult to depend on in Sudan. A notion that does not weigh lightly as it is the country's major employer—"45% of youth and 42% of adults [are] directly employed in the sector. The contribution of agriculture to Sudan's GDP increased from 31.2% in 2010 to 34.1% in 2011 and is expected to rise further to 39.4% in 2012. Value added in the sector grew by 9.3% in 2011 and is estimated to grow by 15% in 2012¹⁴." This projected growth leaves all the more reason to ensure the environmental state of the country—it is a major provider and sustainer of livelihood. With roughly 70 percent of the country dependent on traditional rain-fed agriculture, a continuation of historical rainfall trends can only further devastate the availability and accessibility of food¹⁵.

Also adding to the uncertainty of Darfur's environmental well-being and increasing desertification is its water supply. As previously mentioned, rainfall is unreliable, as it is consistently relatively low and sporadic in most areas—especially to the north. Groundwater supply is also fairly uncertain and a significant source of stress for many IDP camps in Darfur with many of the aquifers in the region being fairly low yield and thus resulting in scattered and somewhat frequent groundwater shortages. Monitoring, and therefore data supply in this area, is

¹⁴ Bennett, John, Abu El Gasim Amir Abu Diek, and Ali Jammaa Abdalla. *UNEP Republic of the Sudan Country Programme Evaluation*. Report. March 2013. Accessed March 2016. (10).

¹⁵ Ibid.

limited, however it was noted in 2006 that five of 12 boreholes ran dry a camp populated by 80,000 in Southern Darfur—a population in which requires over 1,000 cubic meters of water on a daily basis¹⁶. In addition to groundwater, water supply can also be derived from valleys—21 of which have been identified in Darfur with a joint water capacity of 993.8 million cubic meters. Water here, however, is collected by dam—making it much more difficult and resource requiring to access. This is becoming an increasing concern as population, specifically population within IDP and refugee camps, continues to grow in Darfur.

Between 1956 and the start of the conflict in 2003, the population in Darfur exploded from about one million people to six million—an almost 85 percent increase¹⁷ with a current population exceeding 6.2 million people¹⁸. A population growth of this caliber, in a country already limited in resources, and burdened by conflict, can only result in an increased demand and strain on natural resources as cited with both wood and water supply above. As of 2006, the UNEP report cited Sudan as having

“An overall growth rate of over 2.6 percent per annum, masking much higher localized rates. In central Darfur, for example, government statistics indicate a regional population (linear) growth rate of 12 percent per annum, from 3 persons/km² in 1956 to 18 persons/km² in 2003 [4.16]. These growth rates are indicative of large- scale in-migration, in this case mainly from the north and possibly due to environmental factors such as desertification¹⁹.”

The boom in population was not limited to human population growth; the decades preceding the conflict at hand also produced an extensive increase in livestock population growth rates.

Between 1961 and 2004, there was an over 400 percent increase in livestock in just central and

¹⁶ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 88.

¹⁷ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 89.

¹⁸ UNICEF (2012), Current Situation, Sudan.

¹⁹ *Sudan: Post-Conflict Environmental Assessment*, 85.

northern Sudan—this also adding to the strain on land resources²⁰. With increased livestock comes an increase in demand for rain fed and grazing available lands—a demand that became increasingly difficult to meet as drought, desertification, and deforestation continued to modify the terrain. Land use patterns and the subsequent changes that accompanied them were widely varied across Darfur’s geography. For example, Southern Darfur experienced a 138 percent increase in rain-fed agricultural land and a decrease by 56 percent in rangeland, while Jebel Marra increased by 28.9 percent in open forestland between 1973 and 2000²¹. This wide variation leaves much of the country subject to adaptation by migration and modified agricultural norms—much of which is highly dependent on availability of rangeland. Although rangeland is found in almost all of Sudan’s ecological zones, not including extreme desert areas, almost 80 percent is found in semi desert and low rainfall savannah areas. So although grazing land varies between 97 and 117 million hectares within the country, much of it is located in zones highly susceptible to unpredictable rainfall and frequent localized droughts. This leaves the possibility of overgrazing quite high with increased chances of conflict as overgrazing often intersects with cultivation patterns²². The effect of this overgrazing and land degradation are evident as Suliman points out that 1976 saw 12 species of grazing grass in Darfur and in 2000 it saw only one, and the grazing capacity was less than an half animal unit per square kilometer²³.

The existing conflict, and one at the focus of this thesis, has left between 200,000 and 300,000 people dead since its beginning in 2003 in Darfur²⁴ in addition to millions of people left displaced. Internally displaced persons and refugees are not only adding significantly to Sudan’s growing population but also to the increasing burden of environmental issues devastating the

²⁰ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 88.

²¹ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 97.

²² *Sudan: Post-Conflict Environmental Assessment*, 163.

²³ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 57.

²⁴ UNICEF (2012), Current Situation, Sudan

country. Sudan is home to the largest population of displaced persons in the world, with a sum of over five million IDPs and refugees currently residing within camps and urban slums in the country, not to mention the estimated quarter million of Darfuri refugees living in neighboring Chad²⁵. Many of the large camps appeared in Darfur in 2003 as a result of the intensified conflict taking over the region. Consequentially, humanitarian assistance has become a large part of Sudan's economy as it reaches over two million beneficiaries and represents about three percent of Sudan's total economy²⁶. Just about 15 percent of the country is entirely dependent on international food aid—this number only expected to rise as the land becomes increasingly inadequate for agriculture and the violent conflict continues to force people away from their livelihoods²⁷. Even after the two peace agreements that were put in place in both 2006 and 2011 respectively saw a decrease in fighting, people continue to be displaced—most recent data shows that another 137,000 have been displaced since 2009²⁸. As displacement numbers grow, camps remain populated, and the environment continues to dwindle, aid continues to keep a dominant presence in Sudan. Their presence, however, has little to do with any foreseeable positive environmental impact plans. Within their 2006 country report the UNEP did well in summarizing the amount of environmental-related aid activities in Sudan—they recorded a total of 661 UN programs in country at a cost of about 1,730 million US dollars. Of those 661 projects, only three were “targeted environmental projects within conventional humanitarian programmes” at a cost of roughly 0.30 million US dollars; two were “target environmental projects within conventional recover and development programmes” at a cost of about 2.5 million USD; and three were “conventional humanitarian, recovery, and development programmes that have mainstreamed or

²⁵ UNICEF (2012), Current Situation, Sudan.

²⁶ *Sudan: Post-Conflict Environmental Assessment*, 312.

²⁷ *Sudan: Post-Conflict Environmental Assessment*, 310.

²⁸ UNICEF (2012), Current Situation, Sudan.

seriously attempted to mainstream environmental issues into project design and implementation” with no recorded known cost.” In total, only 18 active projects in 2006 were recorded as being environment-related or integrated projects, but again presented with no available data on total cost²⁹. An essential concern for the environmental situation in Sudan is its governance as it is significantly limited in its abilities and resources. That being said, projects related to good environmental governance receive only about 0.7 percent of total aid in Sudan as of 2006—that’s just about 12 million USD³⁰. These numbers and their implications will be further elaborated on within chapter four but the discrepancy here is undeniable. Before directly addressing this disparity in aid allowance, it is relevant and necessary to provide both a history of the environment in Sudan as well as an understanding of the role in which politics play on the environment and people within it.

Chapter Two: Decades of Degradation and Drought: An Environmental History of Darfur

Figures are limited, but any available data for the region does show a considerable shift in desert climate over the last 40 years in Darfur. This shift is one that has undoubtedly affected all three Darfur states as desert climate has shifted roughly 100 kilometers southward over four decades³¹. Although quantitative data is seemingly scarce in regards to issues of desertification in Darfur and Sudan alike, there is still a substantial amount of historical and academic data that suggests at least some attempt at uncovering both the causes and the effects of desertification in the area. This chapter will attempt to use that historical data to map out Darfur’s land and

²⁹ *Sudan: Post-Conflict Environmental Assessment*, 316.

³⁰ *Sudan: Post-Conflict Environmental Assessment*, 313.

³¹ *Sudan: Post-Conflict Environmental Assessment*, 62.

environmental history in an effort to highlight the pattern of unrelenting environmental downturns in Darfur.

Like desertification, drought has been and remains a continuous environmental issue in Sudan that not only is affecting climate and land changes in many regions but that is also significantly impacting livelihoods of local peoples.

“Together with other countries in the Sahel belt, Sudan has suffered a number of long and devastating droughts in the past decades. All regions have been affected, but the worst impacts have been felt in the central and northern states, particularly in Northern Kordofan, Northern and Western Darfur, and Red Sea and White Nile states³².”

The same general pattern has presented in data and field reports that are available—that rainfall is becoming less and less frequent in the Sahel region of Sudan³³. This trend is likely one that is going to continue, according to the UNEP. With this continuous and increasing scarcity of rainfall, the Sahel region of Sudan is becoming more and more unfit for agriculture. With this barrier to agriculture comes a barrier to sufficient enough food productivity; it will become progressively more difficult to support the growing IDP and refugee population in the surrounding areas in the next generations.

At and around the early 1960s, neighboring Chad began to experience a series of debilitating droughts that were quick to alter the ecological state of the region. This same circumstance became a reality in several other parts of the Sahel—affecting one region to another, then another etc. Darfur did not escape the crippling effects of these droughts but was

³² *Sudan: Post-Conflict Environmental Assessment*, 59.

³³ *Sudan: Post-Conflict Environmental Assessment*, 62.

also subject to the migrating Chadians encroaching on the already relatively little resources in the region and thus subject to increasing competition and conflict over water, land, and livestock³⁴.

Droughts continued to devastate the Darfur region well into the 1970s. Although not a continuous period, Darfur experienced 16 years of on and off, both mild and severe, droughts since 1972. With these prolonged periods of drought came extensive ecological damage, resource deprivation, increased tension and conflict, and limited food availability—all of which contributed to the devastating famine that took over the region in 1983³⁵. UNEP's 2006 report documented average annual rainfall in all three Darfur States in two separate periods, 1946-1975 and 1976-2005. All three states experienced a rather significant drop in rainfall by 2005. Northern Darfur experienced a 34 percent reduction; Southern Darfur experienced a 16 percent reduction, and Western Darfur a 24 percent reduction. These present as especially noteworthy given the already low rainfall averages existing in the early twentieth century³⁶.

Most of the droughts between 1967 and 1973, according to UNEP, were localized and less severe, but did still lead several groups to migrate south towards richer lands with better pasture for both grazing and cultivation. Adding to the strain on resources was a number of other events, both natural and human caused, that negatively affected land use and resource availability. "Among these were rapid growth in human population (since the census of 1973 the population in Darfur was said to have increased nearly five times), increased animal wealth; the rise of commercialized farming; and the expansion of mechanized farming³⁷." With the increase in population came an increase in demand for resources and thus increased clearing of land for cultivation, increased fruit and vegetable growing, and increased tobacco cultivation. As demand

³⁴ Miller, Molly J. "The Crisis in Darfur." (*Mediterranean Quarterly* no. 4 (2007)), 121.

³⁵ Osman, Abdal Monium K., and Marc J. Cohen. 2014. "We No Longer Share the Land: Agricultural Change, Land, and Violence in Darfur." *Policy & Practice*, 5.

³⁶ *Sudan: Post-Conflict Environmental Assessment*, 65.

³⁷ Sidahmed, Abdel Salam., Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of Mass Media*, 24.

and use of resources heightened, land rotation as a farming practice became much less of a priority. As a result, lands were over worked and degraded enough so to contribute considerably to rates of soil erosion, land degradation and desertification—this only added to the already negative effects of drought affecting the region at that time³⁸. Such large and constant increases in land use have, in the words of Osman, “undermined the ecological linkage between pastoral livestock production and crop cultivation³⁹.” Farmers began to expand cultivating seasons in an effort to cope with the droughts in the 60s and 70s; this led to an increase in the use of synthetic herbicides, pesticides and seeds rather than staying true to the natural growth cycles they had previously relied on⁴⁰. Because growing shifted more towards permanent agriculture and away from seasonal harvests, with fruit and vegetable growing becoming more popular, many seasonal migration routes for pastoralists, herders, and nomads were much more difficult to access. This made it significantly easier for animals to “trespass” on the land of farmers—thus opening the door for increased conflict over land use⁴¹. “These changes undermined the multiple land-use system and transformed the interaction of the groups and individuals involved, from cooperation for mutual benefit to competition⁴².” Many cultivating tribal groups sought to adapt to these land changes by moving south where land were thought to be wetter and less impacted by the extensive drought taking place in the North. As these new inhabitants began to settle on what was, at that time, primarily claimed by pastoralists, tensions were quick to develop between the native pastoralists and the migrating agriculturalists over land use rights.

³⁸ Sidahmed, Abdel Salam, Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of Mass Media*, 24.

³⁹ Osman, Abdal Monium K., and Marc J. Cohen. 2014. *We No Longer Share the Land: Agricultural Change, Land, and Violence in Darfur*, 10.

⁴⁰ Ibid.

⁴¹ Sidahmed, Abdel Salam., Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of Mass Media*, 24.

⁴² Osman, Abdal Monium K., and Marc J. Cohen. 2014. *We No Longer Share the Land: Agricultural Change, Land, and Violence in Darfur*, 8.

“The southward migrations over time meant that rights to grazing and farmland had to be secured for the new arrivals. And while the customary land tenure system in Darfur was by and large able to manage this, the very process created certain tensions that necessitated locally legitimate institutions to manage effectively and quickly. Two sources of tension included a large decrease in available grazing land and a reduction in the practice of fallowing as part of shifting cultivation⁴³.”

The resulting tensions and implications of the customary tenure system will be further elaborated on in chapter three.

The latter half of the 1970s also delivered quite a few severe flash floods in parts of Darfur—despite the otherwise regular shortages in water. Although not as persistent as prolonged droughts, flash floods often cause major damages to villages as well as damage to agricultural zones, making farming and food provision that much more difficult⁴⁴. As the 1980s approached, droughts remained a struggle for the people and land in Darfur. With continuous both long and short term droughts, in addition to the above mentioned problems with flash flooding, problems with crop-rearing and livestock management continued to present as problematic⁴⁵ in Darfur.

The 1980s in Darfur also experienced much more consistent drops in rainfall—the region was becoming subject to much longer periods without consistent rain. Instead of coping within stretches of one to two years without reliable rainfall, many areas in the region were experiencing “a relentless cycle that lasted for a decade or more⁴⁶.” Adding to the relentlessness

⁴³ Unruh, Jon, and Musa Adam Abdul-Jalil. "Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change." (In *Natural Resources Forum*, vol. 36, no. 4, 2012), 277.

⁴⁴ *Sudan: Post-Conflict Environmental Assessment*, 66.

⁴⁵ *Sudan: Post-Conflict Environmental Assessment*, 48.

⁴⁶ Miller, Molly J. "The Crisis in Darfur," 121.

of the 1980s was also a substantial change in wind patterns—this affecting deforestation rates and degradation of farm and pasture lands. The UNEP cited the most severe drought as occurring between 1980 and 1984—the effects of which were devastating to say the least. Like others in earlier years, this drought played its part in altering the land, changing agricultural patterns, and moving people to migrate south. But unlike the others, the drought of 1980-1984 displaced a substantial number of Darfuris and also generated widespread famine across the region⁴⁷. Land was almost entirely unusable for agriculture and therefore left no way to produce food or to sustain livestock resulting in significant crop and livestock losses⁴⁸.

These conditions, accompanied by the increased desertification, continued to drive many Darfuris south, only furthering land and resource competition⁴⁹. “Until the early 1980s, land availability exceeded need, and this defused potential conflicts⁵⁰” however, the severity of this drought famine combination and the pressure on the land from previous droughts, strained relations and increased disputes over land even more. Miller suggests that these strained relations and grazing disputes were indeed signs of the impending violence that would take over the region in 2003⁵¹. As the decade progressed, drought continued to make scattered appearances—almost as if it were an integral part of climate activity in the region. There were two more significant droughts towards the end of the decade in 1987 and 1989—the latter of which was especially noteworthy. The 1989 drought was reported to have resulted in the killing of up to half of the gum trees in the Darfur region—a resource in which has historically been a significant

⁴⁷ *Sudan: Post-Conflict Environmental Assessment*, 59.

⁴⁸ Sidahmed, Abdel Salam., Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of Mass Media*, 24

⁴⁹ Bennett, John, Abu El Gasim Amir Abu Diek, and Ali Jammaa Abdalla. *UNEP Republic of the Sudan Country Programme Evaluation*, 92.

⁵⁰ Osman, Abdal Monium K., and Marc J. Cohen. 2014. *We No Longer Share the Land: Agricultural Change, Land, and Violence in Darfur*, 7.

⁵¹ Miller, Molly J. "The Crisis in Darfur," 122.

source of economic productivity and which had yet to fully recover as of late 2008⁵². This left many farmers reluctant to share their land with pastoralists in their off seasons, in part because land rotations were less frequent but also because resources were so much more limited as a result of drought and desertification. So by the end of the 1980s, farmers in North Darfur were much less inclined to allow pastoralist herds on their land without charging a fee of some sort⁵³.

The early 1990's also saw several less severe localized droughts in 1990, 1991, and 1993⁵⁴—these too continued to contribute to the significant changes to land and agricultural practices in the region. These changes left farmers and herders to cope and thus adapt to the continuous degradation that was taking place on their lands.

“One significant change in the interdependence of crop and livestock producers was the erosion of the exchange relationship involving crop residues and manure. Traditionally, following the harvest, farmers allowed livestock free access to feed on residues such as stalks, leaves, and the like. Until the early 1980s, farmers welcomed pastoralists and often paid them to camp for several days on their farms right before the cultivation season began, from April to June. By the mid 1990s, agrochemicals and modern technology had replaced manure in irrigated agriculture; rain-fed cultivators had their own herds to provide manure; and farmers increasingly kept their residues⁵⁵.

What began as a transition away from seasonal crop rotations as a means of drought coping quickly pulled farmers away from their mutually beneficial relationships with pastoralists—the

⁵² Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 99.

⁵³ Osman, Abdal Monium K., and Marc J. Cohen. 2014. *We No Longer Share the Land: Agricultural Change, Land, and Violence in Darfur*, 9.

⁵⁴ *Sudan: Post-Conflict Environmental Assessment*, 59.

⁵⁵ Osman, Abdal Monium K., and Marc J. Cohen. 2014. *We No Longer Share the Land: Agricultural Change, Land, and Violence in Darfur*, 8.

result was an instilled sense of competition, skepticism, and foreboding over land and resource use⁵⁶.

Chapter Three: Whose Land is it anyway? The Politics of Land Use

Politics, culture, and livelihood in Darfur are all almost entirely centered around the land—this being exceptionally important to note given the serious risk that desertification and drought is posing to the depletion of land as a valuable resource. This section serves to breakdown the role land plays within these three sectors as well as the role its degradation has played in contributing to and exacerbating conflict in Darfur. Given the heavy dependence on the land, it seems fitting to begin by breaking down the various groups that depend so heavily on it as a source of both livelihood and culture.

Suliman categorizes three main groups living in Darfur—cultivators, nomadic cultivators, and nomadic groups. The first group, historically and not considering forced migration patterns, are sedentary farmers, the second are somewhat sedentary but also semi-nomadic, and the last are predominantly pastoralist herders and entirely nomadic⁵⁷. Within each of these three groups are a number of different tribal identities—an important fact to note, especially as it pertains to the deep seeded ‘ethnic tension’ wound up within the conflict of interest here. The major tribal identities within the cultivators are the Fur, the Masalit, the Tunjir, and the Daju while the largest tribal identities within the nomadic groups are the Zaghawa, the Reizeigat, and the Baggara⁵⁸. Here is important to note that tribal and ethnic relations extend far beyond that of “Arabs” and “Africans” unlike that has been portrayed in western media—there is a much more complex

⁵⁶ Ibid.

⁵⁷ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 32.

⁵⁸ Suliman, Mohamed Osman. *The Darfur Conflict: Geography or Institutions?* 35.

system existing here. Each ethnic group upholds a strong tribal identity often associated with the land they live on and sustain by. For the cultivators, this is the Jebel Marra region in Central Darfur where the Fur is made up of mainly crop cultivators and the Masalit cattle raisers. Nomadic groups depend much more heavily on livestock as they raise camels, sheep, goats, and sometimes cows. All three of these main groups, however, depend heavily on rainfall⁵⁹. This dependence made the consistent drops in rainfall and episodes of drought, as discussed in chapter two, entirely problematic. Cultivators could no longer rely consistently on the same lands, and nomads were forced to alter migration routes—creating a number of conflicts over resource use. Conflicts over resource use were quick to develop into tribal conflicts and soon the conflict in Darfur became almost entirely characterized by ethnic tensions—a phenomenon that is and was much deeper than this.

In an effort to further break down the links between land use, resource scarcity, tribal identity, and intensified conflict in Darfur, the rest of this chapter will focus on land rights and land governance—both of which play a significant role in not only the understanding of this conflict but also in upholding the notion that land, and that the environment, do indeed play a crucial role in the sustainability of the region as a whole. There may be some overlap here with information mentioned in the previous chapters, but it serves as useful as this chapter further breaks down the systems behind land use patterns and governance. “Ultimate control over land and political participation are inseparable in Darfur⁶⁰.” This statement stands true very much due to the heavy and imperative role land plays in livelihoods, economic activity, and tribal identities in the region. Although the history of Darfur’s tribal land use patterns extend long before this,

⁵⁹ *Sudan: Post-Conflict Environmental Assessment*, 81.

⁶⁰ Unruh, Jon, and Musa Adam Abdul-Jalil. "Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change." (In *Natural Resources Forum*, vol. 36, no. 4, 2012), 282.

1917 presented the introduction of the “Native Administration” by British colonial authorities—an administration whose nature and evolution were very much contributing factors to many of the problems that revolved around the land, and thus problems that led to the existing conflict.

“The system rested on the principle of giving traditional tribal and clan leaders autonomous powers to manage the affairs of their respective communities under the oversight of the central colonial administration. Ultimately, tribal leaders were entrusted with the authority to collect taxes from the tribal groupings within their jurisdiction, administer justice among them, and manage relations with other tribes and ethnic groups⁶¹.”

Tribal leaders then reported to paramount chiefs that were to head a coalition of tribes. In addition to this, Native Administration also put in place district tribal officials that had jurisdiction over a particular region (and the tribal groupings within it) rather than a specific grouping of tribes. These district officials were most commonly at the level just above that of paramount chiefs. Paramount chiefs, however, usually represented the highest level of authority in the Native Administration system, he was to delegate duties to lower level authority *omdas* and *sheiks* within tribes and villages.

“The paramount chief was responsible for allocating land for settlement and cultivation. Any tensions or disputes regarding land rights or natural resources would first be processed through the village *sheik* who then communicated with the upper level of the Native Administration to resolve the issue — with the highest frequency of disputes

⁶¹ Sidahmed, Abdel Salam., Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of Mass Media*, 20.

between pastoralists and farmers occurring just before the rains in April when planting is about to commence on areas still being grazed by livestock⁶².”

One of the more important features of this administration was that it provided a rather robust structure for the multitude of tribal groups to apply their identifying customary rights over the land—this was in regards to both territorial control and also to usufruct rights as far as other tribes were involved⁶³. This was important given the seasonal nature of nomadic lifestyles as well in conjunction with the also existing sedentary nature of cultivators. Native administration granted paramount chiefs and tribal leaders the power to allocate usufruct rights “over land for the purposes of pasture, cultivation, or housing to tribal units, clans or individuals⁶⁴” This made seasonal movements among different tribal groups a much smoother process—as seasons changed, nomadic groups in search of grazing sites, water sources, and land for cultivation outside their own territory were able to negotiate rights of passage and usufruct rights with the tribal chiefs of the sedentary groups through which they moved⁶⁵. Not only did this system do well in upholding customary rights but also did so while providing acceptance from central government. It facilitated various tribal groups to live in cooperation but also provided a structured local system of governance to regulate resource allocation, grazing and farming rights, and most importantly, assisted heavily in minimizing disputes between cultivators and herders⁶⁶. This all remained true even within the context of Darfur’s constantly changing (deteriorating) environment throughout the twentieth century. In sum,

⁶² Unruh, Jon, and Musa Adam Abdul-Jalil. “Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change,” 278.

⁶³ Sidahmed, Abdel Salam., Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of Mass Media*, 21.

⁶⁴ Ibid.

⁶⁵ Ibid.

⁶⁶ Unruh, Jon, and Musa Adam Abdul-Jalil. “Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change,” 278.

“The specific customary tenure system in Darfur (called *hakura* tenure) allowed movement, temporary use, and even permanent settlement of newcomers such as nomadic pastoralists both as individuals and groups, provided that they adhered to local customary rules. Farming, grazing, hunting and forest use were included in such arrangements. Nomadic groups participated cooperatively because such arrangements facilitated their overall livelihood system. Grazing rights for nomadic groups were generally not denied and were granted under a variety of situations and conditions depending on the location and status of unharvested crops. Pastoralists from outside the area who wished to farm were usually accommodated within uncultivated waste-land or fallow-land areas, according to local customary norms.⁶⁷”

Unfortunately however, the harmony somewhat exhibited by the native administration was only embraced by central Sudanese government for a short time—it was dissolved in 1971 creating what Abdul and Jalil described as “a precarious institutional vacuum”⁶⁸. This made land disputes much more difficult to solve, especially in regards to conflicts between cultivating and nomad pastoralist tribes—as the land changed and adaptation was very much needed, a governing body like the Native Administration could have proved very useful within the context of a changing climate⁶⁹. Once abolished, the Native administration was replaced with “a populist form of local government based on elected councils at the local, district and provincial levels”⁷⁰. This put significant strain on the incorporation of tribal customary rights—this in conjunction with the rapid environmental change happening in Darfur made tribal coexistence extensively more

⁶⁷ Unruh, Jon, and Musa Adam Abdul-Jalil. “Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change,” 288.

⁶⁸ Pg. 279 Abdul Jalil

⁶⁹ Ibid.

⁷⁰ Sidahmed, Abdel Salam., Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of Mass Media*, 21.

difficult. In light of this, the Native administration was actually reintroduced in the 1980s and into the 1990s⁷¹. However, the back and forth implementation of the system eliminated much of its original functionality and conflict resolution abilities as far as land tenure was concerned⁷².

Although land tenure practices are wound up within an explanation of Native Administration, the significance of land ownership patterns beyond this is rather important—especially in regards to the purpose of this thesis. Land tenure not only granted individuals and tribal communities to estates of their own but the land itself often came to represent a symbol of that tribe's identity, as was mentioned previously in the chapter⁷³. Historically, the land tenure situation had been managed at local and community levels (via Native Administration) and was often undocumented given their reasonable effectiveness and consideration of tribal and cultural identities. With the abolition and reinstatement of the system as well as the simultaneous implementation of poorly planned government regulation initiatives, sustainable land use became much more difficult to monitor, manage, and control—the consequences of which have affected both the environmental and conflict state in the region, both of which are still evident today⁷⁴.

The 1971 Unregistered Lands Act and the People's Local Government Act were both key actors in changing the face of the then current and effective land tenure system. The former of these acts took most of the untitled lands (this including many of the undocumented transactions at the local levels of the Native Administration) and named them as government property. This led the way for the latter act to disable and strip authority from the preceding traditional land management systems, consequentially disrupting the balance that came with the previous

⁷¹ Ibid.

⁷² Unruh, Jon, and Musa Adam Abdul-Jalil. "Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change," 278.

⁷³ Sidahmed, Abdel Salam., Walter C. Soderlund, and E. Donald. Briggs. *The Responsibility to Protect in Darfur: The Role of Mass Media*, 21.

⁷⁴ *Sudan: Post-Conflict Environmental Assessment*, 101.

system⁷⁵. Many Darfuris and Sudanese alike were now left to farm, herd, and support their livelihoods on government owned lands without any authority or control of their own⁷⁶.

Much of the reason these new institutional ways of governance was so problematic was due to the fact that many of these laws were put into place for the whole of Sudan and included more urban areas as well. They were national forms of legislation not designed to be entirely applicable to rural, agriculture heavy areas of the country (i.e. many regions of Darfur). In the early twentieth century and before, much of Sudan's central administration did not interfere with that of customary tenure and thus was not much of a concern in Darfur. But as resources saw new signs of scarcity and as ethnic tensions rose, government legislation "came to be applied to the region when it became advantageous for those from elsewhere in Sudan or those not belonging to the customary farming tribes to do so"⁷⁷.

As land ownership practices and the state of the land itself failed to remain consistent amidst the changing of governance systems, resource driven conflict became a popular phenomenon across most of Darfur. While the removal and reintegration of government programs did indeed play a crucial role in driving this conflict, there are also a number of environmentally significant factors here that need acknowledging. Land use and the institutional governance patterns that accompany it have proven significant in contributing to conflict associated with agricultural lands. UNEP cites four groups of environmentally significant factors that contribute to conflict in this context: supply (factors affecting the available resources), demand (factors affecting the demand for resources), land use (changes affecting the way remaining resources are shared), and institutional (governance and development factors). This

⁷⁵ *Sudan: Post-Conflict Environmental Assessment*, 189.

⁷⁶ *Ibid.*

⁷⁷ Unruh, Jon, and Musa Adam Abdul-Jalil. "Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change," 280.

alone upholds a clear-cut linkage between the political structure, land use patterns, resource availability, and major conflict in Darfur⁷⁸.

Miller reiterates this notion as she too identifies a strong linkage between politics and resources in the region. She notes the recent history of environmental degradation and resulting resource depletion (covered in chapter two of this thesis) and the subsequent local, tribal, and political tensions that have accompanied them⁷⁹.

“Local clashes over rangeland and rain-fed agricultural land have occurred throughout Sudan’s recorded history. In the absence of demographic and environmental change, such conflicts would generally be considered a social, political or economic issue and not warrant an assessment purely on environmental grounds. However, environmental issues like desertification, land degradation and climate change are becoming major factors in these conflicts⁸⁰.”

Clashes of this sort were only exacerbated further with the disintegration and reintegration of the Native Administration. The back and forth, ill planned nature of any governing body severely altered an order of things that had once worked in the region. The changing climate and land status in Darfur disrupted livelihoods, social, and political fabrics—this was most clear during the 1984-85 famine. The conflict and escalated violence during this time foreshadowed much of the violence that was to come in 2003 with the outbreak of current conflict still persisting on in the region. This period witnessed a transition from tribal identity to rigid ethnic categorization—what was once used as a system to settle land disputes and land allocations quickly turned into a

⁷⁸ *Sudan: Post-Conflict Environmental Assessment*, 83.

⁷⁹ Miller, Molly J. "The Crisis in Darfur," 121.

⁸⁰ *Sudan: Post-Conflict Environmental Assessment*, 79.

stringent system that would fuel an ‘Arab’ waged war in the coming decades⁸¹. Ethnic categorization that pitted many tribes and groups against one another was driven further by the politically and socially elite as they often capitalized on the resource induced disputes happening within the region—this did nothing short of further fortifying the already rigid ethnic boundaries⁸².

As the droughts of the 1970s and 1980s forced migration south, many tribes were in search of new lands and access to export markets. This facilitated interaction between the *Fur* tribe, dedicated to farming, and many categorized Arab (pastoralist) tribes, dedicated to herding, as nomadic herders began to increasingly depend on Fur lands for grazing as they migrated down from the north. Prior to the Native administration being disabled, customary tenure managed these interactions quite well with little backlash and/or dispute. However, stable management amongst pastoralist and agriculturalists disintegrated with the Native Administration, influx of drought, and eventual breakout of the Sudanese Civil war in 1983. “Unresolvable disputes between tribes over land resources fed into the developing narratives of injustice, victimization, and retribution which became aligned with different sides in the civil war⁸³.” The Unregistered Land Act of 1971 added to the intensity here as its increased use expedited the government’s taking control of lands that had been previously claimed under the customary tenure system⁸⁴. Many of the pastoralist migrants coming from the north began to use the Unregistered Land Act as a means to claim lands as their own rather than honor the customary systems they previously abided by as part of a mutually beneficial agreement with agriculturalist tribes. Since the land

⁸¹ Miller, Molly J. "The Crisis in Darfur," 122.

⁸² Ibid.

⁸³ Ibid.

⁸⁴ Ibid.

now belonged to the government, the government could allocate the land to them⁸⁵. Resultantly, native farming populations (i.e. the Fur and Masalit tribes) developed a growing animosity towards both nomadic groups and the central government, thus paving the way for the conflict that would erupt in 2003⁸⁶.

Making things that much worse for local farming populations was The Local Government Act of 2003. It transferred some of the powers regarding land back down to a local level but then contradicted this by reducing the number of localities by 80 percent⁸⁷. Unruh and Jalil simplify this as they break down what exactly this meant for local populations.

“A commissioner appointed by the President was declared head of the executive branch of each locality and head of the five administrative departments within each locality, that is agriculture; animal and natural resources; finance and planning; health, education and public affairs; and engineering and town planning. By reducing the number of localities, each one was much larger than prior to the Act. The positioning of the commissioner as head of the locality and of the five departments concentrated decision-making in this position and undermined the role of locally legitimate authorities. The appointment of the commissioner by the President ensured that the priorities of the State, and not those of local populations, would be pursued by the locality administration.”⁸⁸

This deemed the Native Administration, at least what functionality was left of it, to be part of a locality government superseded by the interests of the state rather than by local populations thus,

⁸⁵ Unruh, Jon, and Musa Adam Abdul-Jalil. “Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change,” 280.

⁸⁶ Ibid

⁸⁷ Ibid.

⁸⁸ Unruh, Jon, and Musa Adam Abdul-Jalil. “Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change,” 280-281.

leaving official electing to state governors and officials rather than local populations. With this new law in place, the government could now distribute land freely to whomever they chose—in this case those were merchant elites from more urban areas of Sudan rather than from rural Darfur. Resentment among Darfur's native farming population continued to grow as they lost any say in what happened to what were once their lands, their livelihoods, and their tribal identities⁸⁹. The system put in place by this act left no structure to moderate the coexistence of nomadic pastoralist's behavior amongst sedentary farmers—as a result livestock often encroached on cultivated lands prior to harvest, destroying many crops.

As a result, many complained to the government, both cultivators and pastoralists, about issues of access and timing on cultivated lands for herders that needed grazing. In response to this, the government put in place its own calendar that would regulate when pastoralists could and could not enter cultivated lands—this negated the power of negotiation that tribal leaders once held within customary tenure regimens. Frustration among farmers began to manifest into the burning of grazing areas in close proximity to their lands to discourage pastoralists all together from entering at all into the area. The cycle continued as nomads then began burning farming villages and leading their herds directly to graze on unharvested crops which in turn then led farmers to respond by killing pastoralist's livestock⁹⁰. As the cycle continued to blaze forward, the lands and resources that very much played a part in starting these disputes continued to decay and degrade at the hands of what was at this point a full-fledged battle. The courts were argued, by farmers, to be in favor of Arab pastoralists and thus wanted nothing to do with them in terms of settling land disputes. Courts became useless, and both famers and pastoralists

⁸⁹ Ibid.

⁹⁰ Unruh, Jon, and Musa Adam Abdul-Jalil. "Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change," 281.

continued to resort to their own measures to secure their rights to the land. Eventually, pastoralist groups took up arms as they searched for alternate mechanisms to secure land without the guidance of the customary tenure system; this exacerbated the already security risk associated with land access rights as many resorted to “use of statutory law, Islamic law, and forms of resistance and armed confrontation⁹¹.”

In sum, the purpose here has been to make clear the linkage between tribal groups, politics, environment and resource degradation, and conflict. A UNEP study did well to highlight that this linkage has long existed in Darfur’s history—the 2003 study located the causes of conflict in the region between 1930 and 2000. It found land, water, and land resource competition between pastoralists and cultivators to be the driving forces behind most of the local conflicts cited over the 70-year period⁹². These findings make the need to acknowledge the role of land and environment in Darfur that much more evident. Availability of resources, or lack there of, in Darfur play an imperative role in maintaining livelihoods, balance, and conflict free areas—a notion that humanitarian aid organizations should take far from lightly as they try to combat the effects of the conflict still taking its toll on the region today.

Chapter Four: Where Does Environment Fall on Humanitarian Aid’s List of Priorities?

Displaced persons began flocking to camps for a number of reasons—some of which were wound up in the violent ethnic persecution of the conflict but many of which were not. The three major causes of displacement in Sudan, according to the UNEP’s 2006 report, were those

⁹¹ Unruh, Jon, and Musa Adam Abdul-Jalil. “Land rights in Darfur: Institutional flexibility, policy and adaptation to environmental change,” 284.

⁹² *Sudan: Post-Conflict Environmental Assessment*, 82.

related to the insecurity manifested by the violent nature of the conflict, government-sponsored development schemes, and environmental causes of drought, desertification, and flooding⁹³. Although a number of people were refugees of conflict, a significant number of people residing within these camps are *not* fleeing a kind of direct persecution—many of them are environmental refugees fleeing effects of drought, desertification, deforestation and subsequent loss of livelihood. The purpose of this chapter will be to assert that displaced persons within these camps are fleeing effects of environmental degradation but also that the influx of population and persistence of these camps are further exacerbating existing environmental problems in the region. Most importantly however, this chapter will use this assessment along with an assessment of the prominent aid organization UNICEF to highlight the aid communities lack of attention to the environmental devastation that is not only fueling the increased population of camps but also that the camps themselves are contributing to. The goal here is to implicate the humanitarian community in the region as one that is plainly neglecting the environmental problems that the camps themselves are contributing to, that have contributed to the growing population of the camps, and that keep the camps from reintegrating that increasing population back into self sustainability in society.

Environmental issues due to the high volumes of displacement and the unwavering presence of large camps—some of which have existed for over 20 years⁹⁴—are far from invisible. The most prominent of these issues are the drought and desertification causing much of the displacement, deforestation and fuel wood crisis, land degradation, limited groundwater extraction, and water pollution⁹⁵. However visible these issues are, it remains that environmental concerns are almost never a factor when choosing sites to set up IDP camps nor are they of high

⁹³ *Sudan: Post-Conflict Environmental Assessment*. Nairobi, Kenya: United Nations Environment Programme 2007, 109.

⁹⁴ *Sudan: Post-Conflict Environmental Assessment*, 100.

⁹⁵ *Sudan: Post-Conflict Environmental Assessment*, 104.

incorporation in the programming of many aid organizations⁹⁶. With most of the larger camps being placed in the drier parts of Sudan, severe deforestation has presented as the one of the most apparent environmental impacts of IDP camps. Due to the concentration of demands on natural resources by these large settlements of displaced persons and the already limited timber and wood resources, the areas surrounding camps are becoming heavily deforested⁹⁷. UNEP relates this problem to the,

“scale of the camps and to the standard of aid provision for displaced populations. Indeed, the level of assistance that displaced people receive in temporary settlements varies greatly. International refugees automatically qualify for assistance from UNHCR, while many IDPs do not. The assistance provided can include food aid, a water supply, basic sanitation facilities, tented accommodation or simply cover sheets and some basic household items⁹⁸.”

Because fuel, or any source of energy for cooking, is really ever provided, many camp residents resort to collecting wood chippings, fallen trees, and scattered branches from outside camp boundaries for cooking and heating. Demand for wood is also increased by the need for timber to create temporary shelters in place of the accommodation that is often not provided in many of the camps, and also to sustain and create livelihood strategies in camp areas. Many will collect wood to use as more than fuel for cooking and heating, but also as fuel for brick kilns—this has also become a major source of deforestation in many camps in Darfur⁹⁹. While brick making has actually become a crucial source of income for much of the IDP population in Darfur, the impacts of such high volumes of production and concentrated demand on resources are in the

⁹⁶ *Sudan: Post-Conflict Environmental Assessment*, 105.

⁹⁷ *Ibid.*

⁹⁸ *Sudan: Post-Conflict Environmental Assessment*, 106.

⁹⁹ *Ibid.*

depletion of water resources, damaged farmland, and deforested lands. UNEP describes the impact of brick making in more detail:

“The clay for the bricks is dug from borrow pits by hand, in areas that were often previously farmed. In the wet season, these pits fill with stagnant water and contribute to environmental health problems such as malaria. The water necessary for the manufacturing process is obtained either from watercourses or from deep boreholes with submersible pumps installed by the aid community. The rate of extraction from such boreholes is not monitored, and may in some cases not be sustainable. Finally, trees are needed to fire the bricks in temporary kilns – local studies have found that one large tree is needed to fire approximately 3,000 bricks¹⁰⁰.

Beyond this tangible and direct environmental impact is the impact the aid community itself is fueling, as they are large purchasers of the bricks to utilize them in building two meter high compound walls required by international security standards¹⁰¹. To add to the burden on remaining wood resources is the nonexistence of controlled fuel wood collection programs in many Darfur camps. Many camp residents reported to UNEP that they travel up to 15km to find timber—this helping to explain the extended 10km of deforestation that UNEP found surrounding the camps¹⁰². This leaves a grim outlook for camps in already sparse tree cover areas of Northern and Western Darfur where UNEP estimates that some camps in Darfur will entirely debilitate all useable wood supplies within walking distance. The consequence of this is an extreme limitation on fuel for cooking—this leaving camp residents unable to prepare or eat the cereals, legumes, and flour provided to them by aid outlets, a notion that should be of serious concern to the humanitarian providers in the region.

¹⁰⁰ *Sudan: Post-Conflict Environmental Assessment*, 107.

¹⁰¹ *Sudan: Post-Conflict Environmental Assessment*, 107.

¹⁰² *Sudan: Post-Conflict Environmental Assessment*, 108.

As rural camps continue to contribute to substantial negative effects on the environment, urban-based camps are also playing their part in exacerbating the environmental issues associated with the mass displacement of the Darfur crisis. Located on the outskirts of El Geneia in Western Darfur, Krinding IDP camp is a clear-cut example of the urban environmental issues that have developed out of the crisis. El Geneia as a town has a thriving economy—part of which is largely driven by the economy linked to the large presence of IDP camps and the activities within them. Krinding camp is located, along with several other camps in the area, only about four kilometers from the town center in El Geneia—the camp however, in its sheer size and consistent growth, is slowly but surely encroaching on and becoming part of the town. Although this might present as an economic opportunity for camp residents, it has produced several rather significant ramifications for both the environment and for city and camp residents. Given the proximity, and almost merging, of the town and the camp, there is increased competition for natural resources in a region that was already dry and infertile to begin with. The main source of agricultural land next to El Geneia was already being used significantly by city residents before the camps began to sprout up around it—this has made it incredibly difficult for camp residents, most of which were farmers originally, to develop any kind of rural livelihood in agricultural self sufficiency as any other available land receives next to no water and is sufficient only for minimal grazing and wood collection¹⁰³. Due to the inability to use the land agriculturally, many camp residents venture as much as 20 kilometers from the camp to collect fuel wood and fodder—if not for their own use then to sell in the cities markets to generate at least a small economic supplement in a situation where they are almost entirely dependent on aid. This not only leaves residents, women in particular, vulnerable to instances of rape and assault as they embark on these gathering missions, but also in direct competition with other pastoralists and

¹⁰³ *Sudan: Post-Conflict Environmental Assessment*, 109.

farmers amongst the limited natural resources. This also makes it difficult for local farmers outside the camps to sustain any kind of rural livelihood—creating a lose-lose situation for both populations as well as for the environment and aid efforts in so far as it increases the demand on both.¹⁰⁴ Where natural resources fail in providing sustainable levels of sustenance to camp populations, aid suppliers are expected to make up the difference in providing necessary resources to at the least sustain the lives of these populations.

In fact, at the foundation of humanitarian programming at the United Nations in areas of Sudan and alike is the principle to ‘do no harm’ as they provide aid to affected populations. This principle is also meant for the environment but does not seem to be as clearly or as intentionally upheld as the former. The above examples should highlight just how quickly humanitarian programs can turn to actually doing more harm than good, especially in terms of the environment, as they might just be further inhibiting local communities from achieving sustainable livelihoods. Aside from the direct contribution to environmental degradation mentioned above, the humanitarian presence in Darfur is also directly harming the environment in its lack of environmental projects, programming, and funding. An assessment carried out by the Office of Coordination for Humanitarian Assistance (OCHA) at three separate camps in Darfur in 2001 pointed out just this same notion in its report: “While the environment is an important factor in the Darfur crisis, there is no international agency with a specific mandate to consider or incorporate environmental issues into relief operations and peace efforts¹⁰⁵”.

To explore this phenomenon even closer, the UNEP launched an assessment of several dozen aid projects in Sudan where they adopted a three-part system:

¹⁰⁴ *Sudan: Post-Conflict Environmental Assessment*, 109.

¹⁰⁵ *Sudan: Post-Conflict Environmental Assessment*, 105.

- “1. Assessing the potential negative environmental impacts of projects using the established UNEP/World Bank ‘ABC’ project screening system;
2. Searching for evidence of integration of environmental issues into project design and implementation by qualitative review; and
3. Searching for potential positive environmental impacts of projects by qualitative review¹⁰⁶.”

The World Bank ‘ABC’ screening process, categorizes the scale of a projects environmental impact based on a preliminary rating. Category A classing the project as likely to have substantial effects on the environment, category B classing the project as likely to have some effect on the environment, and category C classing the project as one likely to have little to no effect on the environment. Based on these criteria, there were only three humanitarian aid projects identified in 2006 that were specifically and intentionally designed to confront environmental issues. The UNEP itself is involved in two of these, and only two environmental projects within the recovery and development programs—one of which was UNEP’s own¹⁰⁷. Out of 650 projects targeted to the whole of Sudan, only four were cited as possibly having the ability to implement environmental issues as critical concerns on a national scale. It should also be noted that the criteria in which the UNEP used to identify projects as ‘environmental projects’ were derived from goal number seven of the UN Millennium Development Goals: “*integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources*”¹⁰⁸.” In addition to uncovering the extremely limited amount of environmental programs, UNEP’s assessment also unveiled a number of unintended consequences linked to aid programs, delivery, effectiveness and coordination. The most

¹⁰⁶ Sudan: *Post-Conflict Environmental Assessment*, 311.

¹⁰⁷ Sudan: *Post-Conflict Environmental Assessment*, 314.

¹⁰⁸ Sudan: *Post-Conflict Environmental Assessment*, 313.

significant issues were in the substitution of agricultural dependence by food aid dependence, environmental impacts of humanitarianism (as mentioned previously), absent environmental sector management and implementation, and a lack of environmental issue integration into United Nations country programs¹⁰⁹. The most concerning of these unintended impacts is in the developed reliance on food aid over the last three decades—where the removal of national and international aid would leave the Sudanese people to produce their own food in Sudan. The routine and systematic provision of food in Sudan has taken the place of much of the would-be burden of agriculture had the people of Sudan been trying to cultivate the land being vastly overtaken by desertification, drought, and deforestation rather than relying and sustaining off of the food provided by aid organizations. So, with the removal of aid in Sudan—an eventual goal to secure the self-sufficiency of the country—comes the necessary production of food in country by its peoples. This would place an extensive further burden on the environment as the millions of camp residents would flock to any remaining arable land to restore their former occupations as cultivators and farmers. “In many of the poorer and arid parts of Sudan such as Northern Darfur, it is clear that this extra load would intensify the observed land degradation to potentially critical levels¹¹⁰.” With this, it is imperative that the humanitarian community contemplate the risks of this heightened burden on the land when considering any sort of exit strategy—neglect to do such will only increase the chances of environmental catastrophes great enough to call for a re-introduction of aid into the same areas, i.e. famine as a result of the increased desertification¹¹¹.

There are a number of barriers that are making limited budget allotted to the environment by the international aid community has made it especially difficult to even begin to evaluate the resources and abilities the sector *does* have. Consequentially, the sector has remained relatively

¹⁰⁹ *Sudan: Post-Conflict Environmental Assessment*, 320.

¹¹⁰ *Ibid.*

¹¹¹ *Ibid.*

fragmented and lacking in any kind of central reporting system—this kind of system could be utilized by a number of actors in the environment field to give and exchange information on current problems and solutions¹¹². Lack of coordination, limited prioritization, and a lack of counterpart funding have made it increasingly arduous to mobilize Sudan’s environmental sector. This, in addition to an incredibly

In a more recent report by the UNEP, completed in 2013, was another evaluation of aid work in the field in Darfur. This evaluation did not have as much of an exclaimed purpose to discover environmentally conscious projects as in the previously mentioned 2006 assessment, but it nonetheless found that,

“Many interlocutors, including Government, reinforced and reiterated the inextricable links between governance, environmental management and conflict prevention. Views expressed were: (i) the need for more delegation of powers, (ii) incorporation of traditional leadership practices into government legal framework, (iii) codification of land rights laws, (iv) regulation of migratory routes, and (v) improved water resources management¹¹³,”

Given that this was reported as of 2011, the findings stated above bring attention to the still existing need for more environmentally based solutions. These reports, along with several others by UNEP on the subject of environment uplift the notion that UNEP has seemingly been the only established entity to respond critically and significantly to the environmental aspect of the crisis in Darfur—this does not say much considering that UNEP is indeed the United Nations *Environment Program*.

¹¹² *Sudan: Post-Conflict Environmental Assessment*, 321.

¹¹³ Bennett, John, Abu El Gasim Amir Abu Diek, and Ali Jammaa Abdalla. *UNEP Republic of the Sudan Country Programme Evaluation*. Report. March 2013. (13).

As one of the largest and most established aid organizations in the world, and given their presence on the ground in Darfur since the start of the crisis in 2003, UNICEF is used as a primary example here in efforts to solidify the above mentioned projections. Given the recognition, reputability, and sheer size of UNICEF as an international aid organization it seems like a reasonable enough expectation to presume that they would take on a role in mitigating the disastrous effects of climate change taking place in a country that they have vowed to assist. However, after assessing their media output, annual reports, published statistics, and website information it is evident that this is indeed not the case. For whatever reason, UNICEF's publications on the crisis in Darfur display that their funding, programming, and presence in country do little to prioritize the environment as a key concern. This is not to negate the impact they have made on the ground—as UNICEF has succeeded in providing health, nutritional, and educational assistance in Darfur—but rather to highlight the role it can and should have in a region overwhelmed by environmental downturns and the conflict that both pre and proceeds it. It should also be noted that a more thorough assessment and discourse analysis of a number of aid actors and organizations would prove useful in supporting this thesis, however, for the sake of time and space in this thesis UNICEF—given its prominent role and presence within this crisis and the aid community as a whole—will be used to represent a wider phenomenon taking place across the sector as a whole in terms of the crisis in Darfur.

Since taking on an active role in responding to the extensive and numbers of displaced persons in Darfur, UNICEF has put out a number of media publications on their presence in country. Since 2004 they have published dozens of articles detailing things from their levels of success, the state of affairs in country, to the health problems affecting camp populations, importance of child protection, their role in child education etc. Not a single article title directly

references any aspect of environmental problems, solutions, or involvement in the crisis they are so dedicatedly responding to. The article “Averting Famine in Darfur” only slightly alludes to the environment in Sudan but does so without any direct reference to environmental solutions. UNICEF’s newswire is consistent in putting out articles that cover many of the stresses that are often fueled and/or exacerbated by environmental problems (i.e. drought fueled famine, limited access to water, safety concerns of fuel wood gathering etc.) Even the general “overview” of the crisis on their website includes nothing directly referencing environmental degradation in the region—a rather perplexing realization given the extent and severity of resource depletion in the area as is exhibited in the previous chapters of this thesis. The trend continues within UNICEF’s “statistics” page. Statistics and reports published by the organization are limited to categories of ‘health’, ‘basic education’, ‘nutrition’, ‘water, sanitation, hygiene’, ‘HIV/AIDS’, ‘child protection’, and ‘economic indicators’. Again, nothing here is dedicated purely to environment even on the basis of an assessment or acknowledgement as significant driving force of suffering for the people of Sudan.

Upon the release of the Millennium Development Goals in 2005 by the United Nations, UNICEF did indeed publicly pledge to work toward goal number seven—“To Ensure Environmental Stability”—this was in the form of initiatives to improving water, sanitation, and hygiene amongst IDP and refugee camp populations. Although this is linked to environmental concerns and can be improved with environmentally based solutions it does not do much to address the root issue of resource scarcity and environment induced forced migration in the region or to imply any actual environmentally based solutions.

Similar trends were found in an assessment of two of UNICEF’s annual reports for the years 2005, when the conflict was at its height, and 2010 when violence was declining but aid

remained a major presence in Darfur. The first of the two revealed little to no information in regards to any funding that was being spent on environmental initiatives, as well as little to no information of any environmental initiatives all together. The report just barely referenced the “punishing environment”¹¹⁴ remaining in Darfur but followed up with no foreseeable solutions or strategies to mitigate the effects. The report acknowledges a pledge to Millennium Development goal number seven but is limited to matters of clean water and sanitation rather than matters of land degradation and deforestation vastly affecting the population. Upon completing a search of the word ‘environment’ within the entire 36 page document, the word only appeared a total of four times. The first of which was in its brief mention of the ‘punishable environment’ in the region, and the other being within its acknowledgement of MDG #7 “to ensure environmental stability.” 2010’s report cited Sudan as one of the top four country offices in terms of expenditure signifying that the country at this point was still very much so suffering from the effects of the ongoing conflict that had erupted in 2003. Astonishingly enough, this document too only found the word ‘environment’ four times throughout its entirety—all of which were in regards to learning environments and work in education rather than in terms of ecological degradation and solutions. It too briefly touches on the impacts of the implemented sanitation and water initiatives.

Although not an entirely comprehensive analysis, the findings of this brief analysis support the notion that UNICEF’s claim to take on MDG #7 and work “To Ensure Environmental Stability” is not truly being honored. Ensuring environmental stability in Darfur would require a much deeper commitment to the land, the depleting resources and changing climate in the region, and to its people’s dependence on agriculture. So, while UNICEF has

¹¹⁴ *UNICEF Annual Report 2005*. New York: UNICEF, 2006.

achieved a number of successes in terms of aid delivery in Darfur (clean water, access to education, immunizations, malnutrition etc.), they are overlooking an essential actor that has fueled much of the conflict and thus should be an essential factor in working towards viable solutions.

Chapter Five: How can Aid Organizations Step it up? A Holistic Approach to Climate, Conflict, and Crises Resolution

Making any sort of policy amongst the international aid sector presents as a perplexing task as there is no existing body to govern any kind of recommendation. Any standards, ideals, or goals, developed amongst the network of international aid actors (i.e. the SPHERE standards, Millennium Development Goals, Sustainable Development Goals etc.) have never included any mandate, or been governed by any one body with the power to enforce or dole out consequences if not abided by. However, a policy determined and built on the basis of funding could yield a positive outcome in terms of incorporating environmentally based solutions in the conflicts like that in Darfur.

First and foremost, it is recommended that UN peacekeeping and peace-building operations in Darfur (and other conflicts of similar nature) include environmental assessments as part of their mission—especially given the role in which the environment has played in fueling violence and conflict in the area. Environmental degradation and resource scarcity are key players in driving conflict in Darfur and thus practical measures to mitigate these barriers could contribute significantly to the regions post-conflict recovery. The United Nations Environment Program suggested the implementation of “environmental impact and feasibility assessment for

the return process in Darfur.¹¹⁵ This could have an extensively positive impact if it were to include natural resource assessments in rural regions of Darfur with accompanying armed UN peacekeepers. A significant barrier in obtaining land and resource data in Darfur has been security and political stability issues—by incorporating environmental assessments into the peace building effort at this level, it would facilitate a greater awareness and acknowledgement of the environmental problems that are going to effect, and possibly reignite conflict, among Darfuris if they are to sustain livelihoods outside of camps. A system of this sort would allow for information in regards to the environmental state in the region to be more easily gathered. Subsequently information of that nature could be used to determine what types of solutions the region is in need of, i.e. programs to combat fuel wood shortages, alternative agricultural programs to prevent soil erosion etc.

With a peace building assessment team in place, and once problems and solutions have been quantified in the region, the United Nations—given its reputability, neutrality, and presence within the aid community—could develop a number of standards and ideals for those regions determined as environmentally unstable. This set of standards could include goals similar to those of the Sustainable Development Goals but would also include more specific program requirements in line with the risks and problems identified in initial peace keeping assessments—for Darfur, this would likely include programs that address the foreseeable added burden on the land that would come with any return process of the millions of IDPs and refugees currently residing in camps. The difficulty here, as was mentioned previously is in assuring that organizations on the ground in Darfur adhere to any set of developed standards.

¹¹⁵ *Sudan: Post-Conflict Environmental Assessment*, 117.

In efforts to combat this, the UN and/or UNEP would in turn award funding to those organizations that meet their developed environmental assessment standards. The more standards an organization pledges to uphold, the greater amount of funding they would receive. Ideally the goal here would be to require all relief projects in Darfur to integrate environmental programming and initiatives but given the inability to hold any one organization accountable to this it seems as though an incentive/funding based recommendation would be most likely to encourage desired results. In sum, a policy of this nature has the ability to push organizations to develop programs that are more conscious of ecological sustainability in a way that affects the lives of the population in the region. Given the nature of the Darfur Crisis, and the part environmental degradation and resource scarcity has played in its history and in its politics, humanitarian organizations must move towards the implementation of programs that acknowledge and respond to this if they are to ever see any real exit from the region.

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