Darfur, Conflict, and Climate Change:
Identifying Opportunities for Sustainable Peace

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ABSTRACT

The issue of climate change poses to be one of the most pressing challenges facing community of nation states in the 21st century. While both developed and developing nations will feel the far-reaching impacts of climate change, Africa, as a whole, will be hit hardest by effects of climate change. The combination of resource scarcity, human insecurity, weak political institutions and limited financial means is likely to nurture the ripe conditions for conflict to erupt. Already this is evident in Darfur where the impacts of climate change have contributed to the outbreak of acute conflict. These impacts include expanding desertification, decreased rainfall and land degradation. The consequences are dire, as pastoralists have migrated south for improved grazing for their herds, yet farmers have denied them access due to their marginal lands. As a result, more Darfurians are competing for access to land, water, and other natural resources than at any other time. The increased competition only further aggravates the already uneasy political, social, and ethnic relationships in the Darfur region. This Master's Project first discusses the linkages between climate changes, weak states, and conflict and second how preventative adaptation strategies can alleviate conflicts.

ACKNOWLEDGEMENTS

I. INTRODUCTION

The ongoing conflict in the Darfur region of Sudan has destroyed the lives of

millions of people. In the west, the genocide is often portrayed as an ethic conflict only

between the African farmers and the Janjaweed, or Arab nomads. However, the crisis has

proven to be much more complex. Diving deeper into an analysis reveals a situation that

involves numerous stakeholders across multiple levels, horizontally and vertically, with

their own agendas.

In particular, the environment has played a key role in the conflict in Darfur. The

inhabitants depend heavily on the natural resource base for their socio-economic

activities. First of all, land and water access are crucial for sustainable livelihoods. The

majority of people earn their livelihoods through subsistence agriculture, either farming

or pastoralist.[1] With the increasing competition for land and water resources and the lack

of local conflict resolution mechanisms, the relations between the competing groups have

intensified.

Furthermore, the issue of climate change presents a continuing problem in the

region. The International Panel on Climate Change (IPCC) reports convey that sub-

Saharan Africa will experience some of the most significant effects from climate change,

such as increasing occurrence and severity of droughts.[2] Darfur has already experienced

some of these changes as documented by the UNEP post-conflict environmental

assessment. Climate change impacts in Darfur can present significant implications for

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[1] Fadul, A. A. (2004). Natural Resources Management for Sustainable Peace in Darfur. Environmental
Degradation as a Cause of Conflict in Darfur, Khartoum, Sudan, University for Peace., *op cit*, p. 34
[2] IPCC (2007), *op cit*, p. 13.

future conflicts due to the lack of conflict resolution mechanisms, low capacity, and

absence of an adaptation strategy.

Additionally, the presence of oil resources in Sudan complicates the interaction

with local, national, and international actors. Oil resources can lead to the phenomenon

known as the "Resource Curse."[3] Importantly, the overall interaction of local, state and

international actors with the environment in Darfur has enhanced certain aspects of the

conflict. While attempts at peace have been made, without addressing the environmental

components of the conflict, the tensions will continue.

Although the Sudanese government and one of the three rebel factions signed the

Darfur Peace Agreement (DPA) on 5 May 2006, the conflict has continued to escalate.[4]

Numerous reasons can be cited for the increasing violence; tense ethnic relations, lack of

economic development, exclusionary political system. However, often times the surface

reasons are not the actual root causes of the conflict. One aspect that is often overlooked

is the role of the environment in conflicts. Specifically, Darfur is unique that *the roles of*

resource wealth and scarcity play major parts in the crisis, which are being enhanced by

climate change, low adaptive capacity, and unsustainable development, in a weak state

with a political agenda that favors conflict.

II. OBJECTIVE

The objective of this project is to conduct a literature review of Environmental

Security and Climate Change. My client, Mercy Corps, is interested in this information

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[3] This concept will be discussed in more detail later in the document.
[4] International Crisis Group. <http://www.crisisgroup.org/home/index.cfm?id=4961&l=1>

for their work in the humanitarian sector.[5] Furthermore, the literature review will explore

the current theorized linkages between natural resource accesses, quality of the

environment, governance structures, and conflict. Secondly, the project will analyze the

conflict in Darfur analyzing the role of the environment as a proximate cause and

possible cooperation mechanism. This paper will bring forth four main issues: the

linkages of natural resources and conflict, the role of natural resources in resolving

conflict, issues stemming from climate change, and overall environmental sustainability

in Darfur. My main research question is: how can a country torn apart by decades of civil

war be brought together through cooperation and sustainable management of their natural

resources and environment, especially with the threat of climate change? What can

humanitarian organizations do to help implement post-conflict environmental programs

for short-term and long-term benefits?

III. METHODS

In this project, the first section is dedicated to a literature review of

Environmental Security, Resource Curse, and Climate Change and Security. I have

conducted extensive research to find the prominent scholars in the field. Furthermore, I

have incorporated their works into an analysis of the current debates on linkages between

security and the environment.

In the second half, my project is a case study of the Darfur conflict in Sudan. The

case study analyzes the context of the crisis, and the role of environmental degradation

and exploitation in the root causes of the conflict. The first section of my project shall be

discussing the current context of the situation in Darfur. Why is the region in such

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[5] This document was written for Mercy Corps and for their sole use. The author is responsible for the contents of the document, which does not necessarily reflect the official positions of Mercy Corps. Any questions or comments should be directed to the author.

turmoil? What are the historical grievances and roots of the conflict? Who are the main players? What role does the environment play in the conflict? What are the current property rights (or land tenure), and who benefits or is harmed by them? Is this a resource curse or resource scarcity fueled conflict?

The overall goal is to understand the context of the problem on both a macro and micro level. For dissecting the situation in Darfur, I will use several methods to answer my research question. I will use tools from the Conflict Analysis field, including but not limited to: identification of the conflict stages, conflict mapping, conflict tree, stakeholder analysis, problem analysis, conflict resolution techniques, and others when appropriate.

The next section will focus on the role of natural resources in the region, their linkages to the conflict, and the affects of climate change. Also, I will explore the natural resource and its linkages to specific actors. I will address the technical issues of the contested resources: water, oil and land. Then I will research the impacts of climate change on the population, especially for maintaining the peace in a post-conflict situation.

The final section will focus on cooperation through sustainable environmental management. How can the major stakeholders find common ground? How can NGOs, corporations, governments, grass roots organizations, and international institutions influence the situation? What are the best short-term and long-term solutions for managing limited natural resources? This section will be a policy paper determining the best solution for the current conflict. My client is Mercy Corps, an international humanitarian NGO.

An important part of my research included contacting Mercy Corps to court them as my client for this project. When I received positive feedback, I continued my

relationship with several employees in their organization within their Conflict

Management, Sudan/Darfur Relief Programs and Environmental departments. Primarily,

I have been working with Dr. Jim Jarvie of their Climate Change, Environment, and

Natural Resource Management division.

V. LITERATURE REVIEW

Background to Environment and Security Dialogue

Despite early literature, in both natural and social sciences, climate change has

remains a back-burner issue in decision-making realms. However due to several recent

high profile reports and a Nobel Peace Prize, climate change has been trusted into the

mainstream. Citizens, decision-makers, scientists are struggling to find new mechanisms

to fight the onslaught of global warming and its potential risks to the human population.

Furthermore, since climate change has been fueled by anthropogenic activities, private

corporations, NGOs, and grassroots organizations are adding "green" divisions to their

organizations to try to curb behavior and stimulate research for solutions. Importantly,

more international organizations recognize the important need to study climate change

and find practical solutions for mitigation and adaptation. One area of vital significance is

how climate change will affect the security of human populations (migration, health,

food, etc), especially those residing in weak states and high-risk physical locations.

While the notion of security has evolved to include human and environmental

issues, historically the field contained solely the interests of the nation-states. The Cold

War era limited the definition of security to the interests of the central government,

particularly in the military context.[6] Then, the collapse of the Soviet Union created a

political vacuum that ultimately resulted in an outbreak of civil wars in former

communist and post-colonial states. Suddenly, new questions originated around the

causes of these civil wars. What were the root, proximate, and trigger causes of these

(new) violent conflicts? In the post-Cold War Era, some scholars, especially those

interested in environmental issues, researched linkages between the environment and the

outbreaks of violent conflict. Ultimately, the inquiries led to the emergence of the

Environmental Security field.

        As a result, the need emerged to understand how the environment played a role in

these internal conflicts.[7] Furthermore, scholars wanted to understand both the negative

and positive aspects to a nation's natural resource base; how it can also present

opportunities to mitigate and resolve conflicts, increase environmental cooperation, and

improve governance of the environment to prevent conflicts. However, the problem with

the environmental security field that it has been militarized and nationalized rather than

changing the security paradigm to incorporate human insecurity and domestic causes of

environmental change.[8]

Resource scarcity

        The literature written on resource scarcity has focused around environmental

degradation as a cause of conflict, also known as the neo-Malthusian paradigm.[9] Leading

scholars in this field include Homer-Dixon, Baechler (1999), and Kahl (2006). As the

founder of resource scarcity theory, Homer-Dixon identifies three forms of resource

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[6] Dimitrov, Radoslav S. "Water, Conflict, and Security: A Conceptual Minefield," *Society and Natural Resources*. Vol 15: 677-691, 2002; p. 681.
[7] Clover, Op Cit, p. 107
[8] Barnett, "Global Environmental Change," Op Cit, p. 14
[9] Homer-Dixon (1994), *op cit*.

scarcity: "*demand-induced scarcity*, which results from population growth; *supply-induced scarcity*, which results form the depletion or degradation of a resource; and *structural scarcity*, which refers to the distribution of the resource."[10] The interaction of these three factors is more likely to produce intrastate conflicts versus interstate wars.

Furthermore, in the journal of *International Security*, Homer-Dixon introduces his model for identifying environment-conflict linkages: environmental change, population growth, and unequal resource distribution.[11] "The degradation and depletion of environmental resources is only one source of environmental scarcity; two other important sources are population growth and unequal resource distribution."[12] These main resources: water, land, fisheries, and forests (renewable resources): are essential for livelihoods of millions of people, especially for subsistence users.

With renewable resources, Homer-Dixon identifies two main patterns of interactions for environmental scarcity: *resource capture* and *ecological marginalization*.[13] Resource capture occurs with population growth and natural resource degradation that provides incentives for elites to seize control over scarce resources.[14] Ecological marginalization occurs when environmental changes from degradation lead to significant social effects, such as human migration into more ecologically sensitive areas.[15]

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[10] Gleditch, Nils Petter (2007) Environmental Change, Security and Conflict, in: Crocker, Chester et al, and Eds. *Unleashing the Dogs of War: Conflict Management in a Divided World*. United States Institute of Peace Press: pp.177-196; p. 179.

[11] Homer-Dixon, Thomas. "Environmental Scarcities and Violent Conflict: Evidence from Cases," *International Security*, Vol. 19, No. 1 (Summer, 1994), pp. 5-40; p. 10.

[12] Ibid, p. 40.

[13] Ibid, p. 10.

[14] Raleigh, C. and H. Urdal (2007). "Climate change, environmental degradation and armed conflict." Political Geography **26**(6): 674-694.

[15] Ibid.

Additionally, environmental degradation of natural resources has impacts across horizontal and vertical levels. "Environmental degradation may cause countless often subtle changes in developing societies. These range from increased communal cooking as fuel-wood becomes scarce around African villages, to worsened poverty of Filipino coastal fishermen whose once-abundant grounds have been destroyed by trawlers and industrial pollution."[16] If the state cannot respond to the environmental degradation, either through markets, adaptation, or mitigation policies, then any existing social/economic/political cleavages can erupt into conflict.

In turn, resource scarcity can lead to the "hardening" of the state, especially if controlled by political elites.[17] Transitioning to a state-centered perspective, the state plays an important role in mitigating conflict. According to Kahl (2006), *state failure* and the *state exploitation* can cause violent conflict over scarce resources.[18] Agreeing with Homer Dixon, Kahl argues that resource scarcity, stemming from demographic and environmental stresses (DES), can place significant pressure on state institutions that may lack the capacity to manage the contested resource. On the field level, societal groups (such as pastoralists or ethnic tribe) may experience an absolute depravation (where they are actually separated from the resource for livelihoods) or relative depravation (where groups feel they are entitled to a resource and are denied access) from the resource.

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[16] Homer-Dixon (1991) http://www.library.utoronto.ca/pcs/thresh/thresh1.htm, part 2

[17] "A state's ability to become a hard regime in response to environmentally induced turmoil depends, I believe, on two factors. First, the state must have sufficient remaining capacity- despite the debilitating effects of scarcity- to mobilize or seize resources for its own ends; this is a function of the internal organizational coherence of the state and its autonomy from outside pressures. Second, there must remain enough surplus wealth in the country's ecological-economic system to allow the state, once it seizes this wealth, to pursue its authoritarian course."
Homer-Dixon (1994) *op cit* p. 36.

[18] Kahl (2006) *op cit*.

Through a snowball effect, the denial of groups to important natural resources will lead to economic and political marginalization, often cited reasons for conflict.[19]

A strong state with a healthy civil society can often use their channels to mitigate grievances. In other words, a government that uses "good" practices: such as democracy, avenues for citizen participation, combating corruption, and a functioning legal system: will less likely have internal conflicts erupt over scarce resources. These channels can mitigate elites from rent seeking, strengthen social cohesion, and improve a state's functional capacity for managing natural resources.[20]

Future studies, therefore, should focus on fragile states with a history of internal violence, which will be susceptible to environmental changes due to climate change. Additionally, researching connections between globalization and environmental degradation will be vital to understand why certain areas of the world are being changed faster then others. Understanding the governance structures over natural resources is one avenue for future study; the differences between centralized and decentralized regimes, citizen participation, types of corporations exploiting the resource, and the risk of conflict.

To be considered, however, is the role of scarce resources in peace building initiatives. An increasing amount of literature (e.g. Dabelko, Conca, Kramer, Carius, Wolf, Weinthal) suggests that scarce resources can play a role in the peace building process. In particular, water resources have shown potential for bridging the gap between

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[19] Raleigh, C. and H. Urdal (2007), *op cit*, p. 679.
[20] Kahl (2006) *op cit,* p. 40-43.

conflicting parties.[21] When working in conflict areas, resource scarcity can be used as a

platform to get warring parties to the negotiating table.

Resource curse

On the other hand, the resource wealth paradigm discusses how too much of an

easily exploitable resource and a lack of economic diversity will result in "rent seeking"

by elites.[22] Paul Collier and Anke Hoeffler have written numerous papers on the

dichotomy between "greed" and "grievance" in civil wars.[23] The opportunity to finance

rebellion must be present, as well as access to exploitable resources to keep funding the

conflict. The central government must also be a weak state with a low military capacity.[24]

According to the study, greed overpowers grievances for armed rebellion.

In his work, "Natural Resources and Armed Conflicts," Humphreys outlines five

modalities linked with natural resources and conflict*: rent seeking, greed versus

grievance, grievances, economic instability, conflict financing, peace spoiling.*[25] An

important concept to recognize is that any stakeholder can have economic as well as

political motivations for perpetuating the conflict.[26] "Economic structures affect the

degree to which governments engage with their population, the attitudes of citizens

toward their state, the groups with which individuals identify themselves, and the ability

of states to resolve disputes, either peaceably or through force."[27] The economic

incentives can also affect the different levels of actors involved in the conflict, including

incentives for violence against civilians. This concept helps humanitarian organizations

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[21] Please see literature written by Aaron T. Wolf, et al.
[22] Humphreys, *op cit*, p, 26.
[23] Collier, Paul and Anke Hoeffler, *op cit*, pp. 563-95.
[24] Collier and Hoeffler, *op cit*, p. 7.
[25] Humphreys, *op cit*, p. 26
[26] Ibid
[27] Ibid

understand the linkages between the conflict between stakeholders and targeted violence against their clients.

Climate Change and Environmental Security

In the international policy realm, climate change has gained more attention in the past several years. With the release of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, the scientific community has verified that the "warming of the climate system is *unequivocal*, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level [emphasis added]."[28] Additionally, in 2007, the publishing of the Stern Review found that the "…the benefits of strong, early action considerably outweigh the costs."[29] In particular, both reports strongly agree that developing countries will be the hardest hit by climate change due to lack of financial, technical, and institutional capacity. Importantly, the Stern review notes: "Climate-related shocks have sparked violent conflict in the past, and conflict is a serious risk in areas such as West Africa, the Nile Basin, and Central Asia."[30] Analyzing the linkages between climate change and conflict has found a renewed interest.

Despite the renewed interest in the climate change and security nexus, the phenomenon is not new. In the 1970s, Richard Falk's *This Endangered Planet* and Lester Brown's *Redefining National Security* both explored the connections between security

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[28] Intergovernmental Panel on Climate Change. Fourth Assessment Report. Climate Change 2007:
       Synthesis Report, Summary for Policymakers. Last accessed 19 Feb. 2008
       <http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf>, p. 2.
[29] Stern Review, p. ii.
[30] Stern Review, p. viii.

and the impending climate change.[31] Specifically, Falk pointed out the relationship

between time and climate change: the faster the rate of change, the less time to adapt.[32]

As a result, without proper institutional capacity to manage environmental changes, the

risk for violent conflict increases especially in weak states.

Another prominent scholar, Jon Barnett, explores the linkages between climate

change and conflict: the political scale, the nature of governance, and the nature of

environmental (as opposed to resource) changes affected by climate change.[33] Since

climate change has global impacts versus a localized problem, different levels of analysis

will be needed to understand the social, economic, and political effects on livelihoods,

especially for adaptation programs.[34] Furthermore, Barnett stresses the importance of

understanding that nation-states are unlikely to declare war with one another due to

climate change effects, most likely conflicts will erupt intrastate. "Conflicts in which

environmental change appears to be a contributing factor tend to be within rather than

between states, and it is at this sub-state level that a climate change-conflict research

agenda would most profitably focus."[35] Research by Hendrix and Glasner (2007)

supports this need for research, analyzing different geographic scales to incorporate sub-

state factors.[36]

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[31] Falk, Richard. *This Endangered Planet*: *Prospects and Proposals for Human Survival.* Random House, New York: 1971
 Brown, Lester. *Redefining National Security*. 1977
[32] Falk, Op Cit, p. 353.
[33] Barnett, Jon. "Security and Climate Change," *Global Environmental Change*. Issue 13, 2003, pp. 7-17; p. 10.
[34] For this paper I will use the following definition: "*Adaptation* refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and the effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit form opportunities associated with climate change." Smit and Pilifosova et al, *op cit*, p. 879.
[35] Barnett, Op Cit, p. 10.
[36] Hendrix and Glasner, *op cit*, p. 709.

Rather than solely a state-level problem, climate change will have different effects on varying scales. Currently, most of the literature focuses on state level analyses.[37] States may have a propensity for using climate change to further their own agendas. Therefore, Barrett argues that issue of climate change should not be hijacked for military and sovereignty agendas that would undermine the nature of the global common and foreign policy problems.[38] Solutions should be in the spirit of preventing environmental injustices against sensitive populations; and strengthening the state's capacity for climate change policies. Furthermore, the need to develop a state's capacity to mitigate and resolve conflicts will be crucial for long-term planning.

Weak states can contribute to the outbreak of conflict as well. "The weakening of the state is seen as an intermediate factor between resource scarcity and violent conflict."[39] Furthermore, the weak state theory has two channels: one focuses on the society side of weak state-civil society relations and the other on the state's relationship with civil society.[40] With resource scarcity, degradation of the environment can weaken the social cohesion and functional capacity of a state.[41] Additionally, focusing on the state side, rich oil resources can contribute to a weak relationship between states and civil society.[42] States will rely on oil revenues rather than taxation systems to fund their government.[43] States have less accountability with their constituents and less incentive to

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[37] Nordas and Gleditsch, *op cit*, 634
[38] Barnett, "Security and Climate Change," Op Cit, p. 14.
[39] Raleigh, C. and H. Urdal (2007). "Climate change, environmental degradation and armed conflict." Political Geography **26**(6): 674-694. *op cit*, p. 679.
[40] Humphreys, M. (2005). "Natural Resources, Conflict, and Conflict Resolution: Uncovering the Mechanisms." Journal of Conflict Resolution **49**(4): 508-537., *op cit*, pp. 512-513.
[41] Kahl (2006) and Raleigh, C. and H. Urdal (2007). "Climate change, environmental degradation and armed conflict." Political Geography **26**(6): 674-694., *op cit*, p. 679
[42] Humphreys, M. (2005). "Natural Resources, Conflict, and Conflict Resolution: Uncovering the Mechanisms." Journal of Conflict Resolution **49**(4): 508-537., p. 512-513.
[43] Ibid.

provide public services. With impending climate change, a state's capacity for mitigation and adaptation will be crucial. As a result, targeting weak states is paramount for preventing climate change related conflicts.

Essentially, climate change will significantly affect livelihood securities as well. "The impacts of future changes [of climate change] will be felt primarily by resource-dependent communities through a multitude of primary and secondary effects cascading through natural and social systems."[44] Some impacts will be gradual, such as desertification, droughts, or rising sea levels, or some immediate with increased heat waves or strong storms. Despite the type of environmental change, the underlying issue remains the same: human livelihood insecurity. An urgent need develops for the state to increase their role for service delivery and less on their traditional national security agendas.

> …Climate change undermines human security in the present day, and will increasingly do so in the future. It does this by reducing people's access to natural resources that are important to sustain their livelihoods. Climate change is also likely to undermine the capacity of states to provide opportunities and services that help people to sustain their livelihoods, and which help to maintain and build peace. In certain circumstances, these direct and indirect impacts of climate change on human security and the state may in turn increase the risk of violent conflict.[45]

Therefore, climate change adaptation projects, especially those in weak states, should focus on increasing the state capacity for conflict prevention. The state will need to handle significant macro issues such as disaster relief programs, food insecurity from

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[44] Adger, W. Nei. "Social Capital, Collective Action, and Adaptation to Climate Change," *Economic Geography*. 79(4): 387-404, 2003; p. 387.

[45] Barnett, Jon and W. Neil Adger. "Climate change, human security and violent conflict," *Political Geography*. Vol. 26, 2007, pp. 639-655; p. 651.

agriculture failures, decreasing potable water supply, human migrations, livelihood

protection and diversification, and competing interests for natural resources.

Combining a weak state-civil society structure with the onset of climate change

creates a new set of problems. For instance, states heavily reliable on agriculture

commodities will be affected by climate change through decreasing crop yields.

Containing conflict is critical at the local level as well. Citizens, especially in

rural areas, must be given the tools to increase their capacity to adapt to climate change.

In particular, local conflict resolution mechanisms and environmental education will be

necessary to mitigate issues of resource access, especially among pastoralist and

agriculturalist communities.[46] Importantly, these systems should include early warning

indicators to prevent conflict from erupting between groups of people. [47]

Additionally, one significant consequence of immediate concern is food security.

While greenhouse gas (GHG) emissions continue to increase, climate change will

continue to impact the global population in several different ways. For instance, the IPCC

report states that when temperatures rise above 3° C, the potential for food production

will decrease.[48] As a result, without proper governance and effective institutions in place,

the potential for food insecurity will occur. In turn, without proper distribution

mechanisms, conflict can erupt. Therefore, research and development should focus on

preventative measures to mitigate conflict. "This calls for the urgent need for mitigation

against the causes, and management of environmental insecurities arising from threats

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[46] Brown et al, *op cit*, p. 1151.
[47] According to Fisher et al, early warning indicators for violence, in relation to the environment, include:
refusal of access to natural resources and burning of grass. Fisher et al, *op cit*, p. 164.
[48] IPCC, Summary for Policymakers, p. 11

such as degradation and climate change."[49] In particular, projects should focus on sector

reforms for adaptation and distribution of resources.[50]

At the government level, market forces and institutional policies can increase

environmental changes. By planning for long-term strategies, such as switching to less-

water intensive crops, improving the distribution of food, and environmental education

can help societies adapt to changes in supply. "Therefore, adaptation processes involve

the interdependence of agents through their relationships with each other, with the

institutions in which they reside, and with the resource base on which they depend."[51] In

other words, a primary adaptation strategy is improving the state's capacity to provide

basic needs for its citizens, and plan sector strategies based on the climate predictions for

their region. "But there are some public goods that can only easily be provided by the

state. These goods include major infrastructural investment in flood defense, the

management of water resources, and spatial planning that become necessary when the

impacts of climate change are significant and risky for large populations."[52] Weak states

continuously fail to provide public goods for their citizens. Strengthening multiple levels

of governance: local, regional, and national: will help states prepare for climate change.

Part of the strategy for adaptation should include grassroots education and

collective action campaigns to strengthen civil society and their knowledge of climate

change. Important to adaptation, however, includes the incorporation of indigenous

knowledge in these programs. In particular, this step will be crucial in post-conflict

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[49] Clover, Op Cit, p. 107
[50] However, the focus on immediate short-term concerns can undermine long-term planning for climate change adaptation. For instance, increasing food production now, in anticipation of droughts or crop failure, can lead to enhanced land degradation and decreased soil quality. Also, the type of crop, livestock, rotation of fields, and other exogenous factors can determine the speed of environmental degradation. For instance, camel herders have much more impact on over-grazing issues on lands than sheepherders.
[51] Adger, Op Cit, p. 388.
[52] Adger, Op Cit, p. 396.

societies as a method for localizing solutions and improving the social fabric. "Thus, stakeholders from the civil society buy into a shared vision of risk and adaptation in the long run and sustainable resource management in the immediate term."[53] However, vertical linkages between civil society and the state must be present in order for this scheme to be effective. As a result, healthy social networks are key for adaptation and recovery, especially with extreme weather events.[54] People will be more inclined to help one another if they have a sense of trust with their neighbors.

Furthermore, in post-conflict reconstruction, climate change can impede the peace building process. War-torn societies will find themselves reconstructing economies while concurrently adapting to climate change. The variability of climate change can impede economic growth. Therefore, in development projects, adaptive capacity to climate change must be included with post-conflict reconstruction projects, especially for strengthening institutions. "The constraints on adaptive capacity- poverty, weak governance and political marginalization- are also among the factors that contribute to conflict."[55] In other words, development and climate change adaptation programs have dual benefits to war-torn societies. "'Adaptation', if well done, could help direct international money and attention to reducing vulnerability not just to climate change but also to environmental degradation, poverty, and conflict."[56] Since environmental degradation and poverty are often root causes of conflict, climate change adaptation policies conform well to the peace agenda.

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[53] Adger, Op Cit, p. 396.
[54] Adger, Op Cit, p. 397
[55] Brown et al, Op Cit, p. 1150.
[56] Brown et al, Op Cit, p. 1152.

On the other hand, post-conflict reconstruction programs can include opportunities to increase climate change adaptation. The goals of both programs are mutually beneficial. "…Adaptation does indeed provide an opportunity for positive, fruitful intervention by the international community to foster peaceful economic cooperation among competing groups of resource users in regions where achieving sustainable livelihoods is a challenge at the best of times."[57] Climate change adaptation programs can bridge the divide between groups. "By resolving conflict and creating the environment for sustainable use, networking social capital and co-management institutions enhance the capacity to adapt to the impacts of changes in climate…"[58] In turn, these relationships will strengthen civil society through trust and cooperation. When impacts from climate change occur, conflict mitigation mechanisms will already be in place.

Climate Change in Africa

In particular, sub-Saharan Africa contains the most vulnerable populations to climate change due to their fragile environment, poverty, and weak adaptation capacity. [59] Evidence of droughts and increasing temperatures has already been noted in this region, thereby reducing the length of the agricultural growing season. For societies dependent on natural capital, changes in climate can have detrimental effects on their livelihoods, especially since most of sub-Saharan Africa's populations are impoverished. "Low adaptive capacity of Africa is due in large part to the extreme poverty of many Africans, frequent natural disasters such as droughts and floods, agriculture that is heavily dependent on rainfall, as well as a range of macro-and micro-structural

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[57] Brown et al, *op cit*, p. 1151
[58] Adger, Op Cit, p. 398.
[59] Boko et al, *op cit*, p. 448.

problems."[60] These developing countries often lack the institutional capacity to help these populations through these droughts and extreme weather events, particularly in the agricultural sector.

Furthermore, many of these countries are highly dependent on agricultural commodities. Humphreys (2005) concludes that: "…countries dependent on agricultural commodities are at risk, independent of their endowments of oil and diamonds."[61] Natural resource rents, in states such as Nigeria, Sudan, and Chad, provide little incentives to create strong bureaucracies for improving sectors in agriculture and industry. The dependence on agriculture and the lack of industrialization provides little opportunities for income diversification needed to help mitigate conflict.[62] When countries experience changes in agriculture production, such as from drought, this effect can have profound impacts on social cohesion by increasing food insecurity and altering crop yields.

According to a study by Hendrix and Glasner (2007), precipitation has a significant effect on societies dependent on rainfall agriculture, especially at subsistence levels.[63] "Our analysis suggests that breaking this relationship of dependence on rain-fed agriculture will have positive effects for mitigating conflict."[64] When the rains fail and crop growth stagnates, water and food security become significant problems. Coupled

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[60] Boke et al, *op cit,* p. 454.
[61] Humphreys, M. (2005). "Natural Resources, Conflict, and Conflict Resolution: Uncovering the Mechanisms." <u>Journal of Conflict Resolution</u> **49**(4): 508-537., p. 534.
[62] "In identifying at-risk countries and in engaging in conflict prevention along side initiatives to clean up particular commodity trades, there is a need to pursue strategies of diversification more aggressively, directed at bringing countries outside of dependence on primary commodities more broadly defined." Ibid., p. 534
[63] Hendrix and Glasner, *op cit*, p. 711.
[64] Ibid.

with a weak state and organization around grievances, violent conflict can easily erupt in

places such as Darfur.

Darfur and Climate Change

After examining the security implications of climate change in developing states,

the region of Darfur in Sudan provides an interesting crossroads of environmental

changes intersecting with socio-economic, political, and ethnic manipulations for inciting

conflict. Recently, connecting climate change and the Darfur conflict gained scholarly

and media attention. In 2007, UN Secretary General Ban Ki Moon released an editorial in

the *Washington Post* highlighting the connection between climate change and the conflict

in Darfur.[65] He wrote how "…amid the diverse social and political causes, the Darfur

conflict began as an ecological crisis, arising at least in part from climate change."[66] The

impacts from climate change, such as the 20 year Sahelian drought, altered resource

usage and access among the different stakeholders.[67] Desertification increased

significantly in northern and central Darfur, availability of fresh water resources declined,

and farmland and grazing areas deteriorated.[68] Interestingly, the same drought affected 16

other countries in the Sahel region.[69] However, only Sudan has experienced such

widespread violent conflict due to climate change impacts. What political, social,

economic, and environmental conditions in Sudan initiated the violent conflict in Darfur?

The following conflict analysis attempts to highlight the environmental aspects of the

Darfur crisis and provide recommendations for peace building through climate change

adaptation.

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[65] Ki-Moon, *op cit*.
[66] Ibid.
[67] Assal, *op cit*, p. 102.
[68] O'Fahey, *op cit*, p.26
[69] Smith et al, *op cit*, p.12

VI. CASE STUDY- DARFUR

A. Executive Summary

Since 2003, Darfur has been plagued with genocide and violence despite actions to negotiate a peace agreement between the Government of Sudan and a few Darfurian rebel groups since 2003. However, the root causes of the conflict have not been addressed and important stakeholders ignored in peace processes. Furthermore, the region has experienced the effects of climate change with increasing desertification and decreased rainfall. As a result, more people are competing for access to land, water, and other natural resources in Darfur intensifying cleavages. Since the conflict intensified in 2003, natural resources necessary for survival became even scarcer, especially water and land. The situation is very grim.

My client, Mercy Corps, has a long history of humanitarian work in conflict zones. Currently, their organization continues their humanitarian programs as well as expanding into development projects. In addition, Mercy Corps initiated their own environmental division to reduce their impacts on the environment as well as identify potential risks from climate change. They have a keen interest in the linkages between climate change, conflicts, and fragile states.

Complimenting their relief work in Darfur, Mercy Corps should focus on incorporating climate change adaptation strategies into their humanitarian programs. Through establishing water and land committees, encouraging NGOs partnerships, civil society strengthening, education, livelihood training, and poverty alleviation strategies will help the Darfurians gain the necessary skills and knowledge to adapt to future climate changes without inciting conflict.

B. Background to the Conflict in Darfur

History of the Conflict

After gaining independence from the United Kingdom in 1956, the Republic of

Sudan has experienced decades of military regimes favoring Shari'a law, civil wars, and

ethnic strife.[70] Since the 1980s, Sudan has experienced internal conflicts. In 1989, the

National Islamic Front (NIF) gained power through a military coup.[71] As a result of

Arabization and authoritative policies, a 20- year civil war erupted between the Arab,

Muslim north and the non-Muslim, African south, called the Sudanese People's

Liberation Movement/Army (SPLM/A). In 2005, these two sides reached a peace

agreement. However, conflict in another area of the country, Darfur, entered the crisis

stage after years of low-level conflict.[72]

In 2003, the Sudan Liberation Army (SLA) headed by Minni Minawi, rebelled

against the GOS and its ruling party, the National Congress Party (NPC), by attacking the

airport in El Fashir, the capital of North Darfur.[73] They cited grievances of political and

economic exclusion from the centralized government. [74] The act destroyed several GOS

air force planes that, in turn, triggered an escalation to the tensions between the Darfur

people and the GOS.[75] In response, the GOS enlisted the aid of the Black, nomadic,

Arab-speaking population, called the Janjaweed, to subdue the rebellion. Although the

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[70] <https://www.cia.gov/library/publications/the-world-factbook/geos/su.html>.

[71] They later changed their name to the National Congress Party (NCP).
<https://www.cia.gov/library/publications/the-world-factbook/geos/su.html>.

[72] UNEP (2007). Sudan: Post-Conflict Environmental Assessment. U. P.-C. a. D. M. Branch. Nairobi, Kenya**:** 356., p. 36.

[73] Gidley, Ruth. "Oil Discovery adds new twist to Darfur tragedy," *Reuters*. 15 Jun 2005. Lexis-Nexis.

[74] The SLA's reasons for war includes but not limited to: marginalization from the GOS decision-making process, lack of political power, underdevelopment, absence of water infrastructure, and land grabs. <http://news.bbc.co.uk/2/hi/africa/3496731.stm>
ICG (26 Aug 2007) N°130, *op cit*, p. 12.

[75] Human Rights Watch. *Darfur 2007: Chaos by Design- Peacekeeping Challenges for AMIS and UNAMID*. Sept 2007 Vol. 19, No. 15 (A), p. 27.

SLA and the GOS signed the Darfur Peace Agreement (DPA) in 2006, the fighting has

continued to escalate.[76] Since the fighting began over 2.5 million Africans have been

displaced and over 250,000 people have been killed.[77] The situation in Darfur remains

very violent, extremely unstable, stagnates at the crisis stage. As a result of the crisis,

management of the environment remains a peripheral issue in order to meet the

immediate needs of affected populations.

Country Context Analysis
Socio-Economic analysis
In 2005, Sudan has a population of 32.6 million and a population growth of

2.6%.[78] The region of Darfur, in particular, has seen a population increase of 1.08 million

in 1956 to 6.48 million residents in 2003.[79] This increased the density of person per

kilometer from 3 to 18 people.[80] Also, demographics show that most of Sudan is young;

resulting in a "Youth Bulge" with the average age for males at 18.7 years.[81]

As of 2006, the per capita income is $650 resulting in widespread poverty and

under-development. Despite the poverty, the economy of Sudan is growing with an 11%

increase in 2006.[82] However, most of this growth remains concentrated in the states

surrounding Khartoum. Most of the economic growth can be attributed to International

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[76] The Darfur Peace Agreement was signed by only one rebel faction and failed to include the other groups. International Crisis Group. "Darfur: Revitalizing the Peace Process." *Crisis Group Africa Report*, N°125, 30 April 2007; p. 3.
[77] Some UN estimates are as high as 300,000 Darfurians killed since the crisis began.
<http://news.bbc.co.uk/2/hi/africa/7361979.stm>
[78] *World Bank Group*. "Country Brief-Sudan."
      <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/SUDANEXTN/0,
      ,menuPK:375432~pagePK:141132~piPK:141107~theSitePK:375422,00.html> Accessed 15 Oct
      2007.
[79] Fadul, *op cit*, p. 35.
[80] Increase in population density versus just population increase increases the chance of conflict. Ibid.
[81] <https://www.cia.gov/library/publications/the-world-factbook/geos/su.html>.
"The youth bulge theory contends that developing countries with a large proportion of young men are more vulnerable to conflict, especially when they compete for a dwindling resource base." Matthew et al (2004) *op cit*, p. 7.
[82] *World Bank Group*, Op Cit.

Monetary Fund (IMF) macroeconomic reforms in the late 1990s.[83] Despite improvements

in macroeconomic stability, inflation remains a serious problem for the economy, rising

from 5.6 % in December 2005 to 15.7% in December 2006.[84] Most of the economic

growth stems from the increasing petroleum exports due to the construction of a major

pipeline in 1999.[85] According to the US Department of Energy, Sudan's oil exports

account for 70% of total export revenues.[86] Although the country's economy is

increasing revenues, their external debt remains at (US) $29.7 billion in 2006.[87] The lack

of economic diversification weakens the manufacturing sector, encourages rent seeking

by elites, and subjects Sudan to price shocks.

As a result of limited economic growth and internal conflicts, the Human

Development Index (HDI) is 0.526 with an average GDP per capita of $2,083.[88] Out of

all the 152 countries in the world, this ranks Sudan 147 and 136, respectively. Agriculture

remains the primary source of income, consisting of 35.5% of Sudan's GDP, mostly

occurring in the fertile central Sahel belt.[89] About 80% of the workforce practices

agriculture, 6% in Government, and 10% in Industry and commerce.[90] In the Darfur

region, the main professions are subsistence agricultural or pastoralist activities, but these

identities are fluid. Furthermore, these Darfurian pastoralists and agrarian societies

compete for a fraction of the 6.78% arable land in Sudan.[91] Oil remains one of Sudan's

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[83] Tradeport. Last accessed 16 Mar 2008 <http://www.tradeport.org/countries/sudan/01grw.html>
[84] Ibid.
[85] <http://www.eia.doe.gov/emeu/cabs/Sudan/Background.html>
[86] <http://www.eia.doe.gov/emeu/cabs/Sudan/Background.html>
[87] <http://www.eia.doe.gov/emeu/cabs/Sudan/Profile.html>
[88] Human Development Report 2007
<http://hdrstats.undp.org/countries/country_fact_sheets/cty_fs_SDN.html>.
[89] Ibid.
[90] <http://www.tradeport.org/countries/sudan/01grw.html>
[91] <https://www.cia.gov/library/publications/the-world-factbook/geos/su.html>

key industries with 6.4 billion in reserves.[92] However, most of the revenues remain in the

central government and the GOSS.[93] As a result, the majority of the population has little

opportunity for economic development and alternative employment.

The Darfur region has numerous tribal groups that are predominantly Muslim.

The *African* agriculturalists, or "Zurga," consist of the Fur (the dominant tribe), Masaalit,

Tama, Tunjur, Bergid, and Berti tribes.[94] The pastoralists mainly include tribes of *Arab*

descent: Rizeigat, Mahariya, Irayqat and Beni Hussein and African Zaghawa (nomadic

camel herders).[95] However, many of these tribal identities have become politicized due to

the influence of outside forces. Also, many tribes across the region have switched back

and forth between agriculture and pastoralist occupations due to economic or political

pressures.[96] Importantly, the distinction between 'Arab' and 'African' has more to do

with lifestyle rather than ethnicity.[97] Historically, these identities remained fluid.[98]

However, the involvement of the GOS and the SPLM arming different groups forced the

identities upon these groups.

Due to the numerous internal conflicts, approximately five million people are

internally displaced (IDPs) or international refugees, thereby ranking Sudan first in the

world for displaced persons.[99] In Darfur alone, since 2003 about 2.4 million people have

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[92] Ibid.

[93] Distribution of oil revenues was a hotly contested issue with the peace negotiations between North and South. Within the Comprehensive agreement signed in 2005, wealth sharing was a major component. ICG. Comprehensive Peace Agreement, *op cit*, p. 2.

[94] Human Rights Watch. *Sudan- Darfur in Flames: Atrocities in Western Sudan*. (April 2004) *op cit*, p. 6

[95] Ibid.

[96] During the 1960s and 1970s, before the abolishment of the Native Administration, identity changes were common among the different groups in southern Darfur. At the time, the Fur tribe had political domination of the region. "…Communities 'became Fur' for political reasons; now individuals might 'become Baggara' for economic ones. There were studies of the sedenterization of nomads, underlining how the nomad/farmer distinction is an extremely blurred one." De Waal, *op cit,* p. 194.

[97] Faris, *op cit*, p. 2 and De Waal (2005), *op cit*, p. 194.

[98] De Waal, Op Cit, p. 194.

[99] UNEP, *op cit*, p. 9

been displaced by the violence.[100] As a result, the social structures of the Sudanese

people have been severely disrupted from decades of civil war. Many people know

nothing else besides living in a time of violent conflict.

Political Analysis

Despite Sudan being divided into 25 states (includes 3 states of Darfur), the

political structure of the GOS concentrates decision-making power in the central

government.[101] Presently, the CIA World Factbook refers to the government type as

"authoritarian republic."[102] On the national scale, the National Congress Party (NCP)

controls any political-making decision from Khartoum.[103] After a military coup in 1989,

current President Omar al-Bashir has established a regime that promotes Islamist and

Arab-centric policies, known as *arabiyya* or *uruba*.[104] As a result, the policies have added

an ethnic element to the current conflict.

On the regional scale, the local governance has a low capacity due to the

centralization of political power by Khartoum. Stemming from the colonial days, the

Native Administration managed local affairs through a governorship and regional

councils.[105] However, broader regional administrative changes in the early 1980s

deepened the agriculturalist/pastoralist divide.[106] The governance structure lost the ability

to mitigate disputes effectively. Since the GOS divided Darfur into 3 states, this new

structure has severely weakened the Fur political power, thereby increasing their political

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[100] Ibid.

[101] CIA World Factbook. <https://www.cia.gov/library/publications/the-world-factbook/geos/su.html>

[102] Ibid.

[103] <https://www.cia.gov/library/publications/the-world-factbook/geos/su.html>

[104] O'Fahey, *op cit*, p. 27.

[105] "Who are the Darfurianans? Arab and African Identities, violence, and external engagement," *African Affairs*. p. 192

[106] The Fur dominated political groups have dominated the regional politics that in turn alienated non-Fur groups. Johnson, Douglas H. *The Root Causes of Sudan's Civil Wars*, p. 139.

vulnerability.[107] Also, this redistricting enabled the GOS to appoint their own governors, in turn increasing their influence over the region.

Since 2003, the conflict in Darfur has continued to disrupt the millions of lives of Darfurians, as well as delay any peace building initiatives. After several years of fighting, the signing of the Darfur Peace Agreement (DPA), between the SLA and the GOS was seen as a milestone for peace. Significantly, the DPA includes a clause on land reform establishing the Darfur Land Commission and provisions on traditional land rights.[108] However, only one of the three rebel groups signed the accords, with the Justice and Equality Movement (JEM) and the SLA faction headed by Abel Wahid Mohamed (SLA/AW) and it holds very little political power.[109]

Environmental Context of the Conflict

In summary, the environmental aspect of the conflict in Darfur exists on two scales: local and national. The impact of the Darfur conflict on the environment has been significant.

Ecology of Darfur

On the local scale, Darfur has six main ecological zones that have varying farming, livestock, and livelihood systems.[110] Importantly, the occurrence of rainfall drives the two main socio-economic activities of agriculture and pastoral. Rainfall refills important *wadis*[111], aquifers and wells crucial for growing food and sustaining

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[107] Ibid.
[108] Darfur Peace Agreement (2006), paragraphs 163-167, <http://www.unmis.org/english/dpa.htm>
[109] "Darfur: Revitalizing the Peace Process," p. 8.
[110] Abdalla, Abdalla Ahmed. "Environmental Degradation and Conflict in Darfur: Experiences and Development Options," Op Cit, p. 87.
[111] An Arabic term, a *wadi* is a dry riverbed or stream that is refilled during the rainy season.

livelihoods.[112] However, since the 1980s, the rate of rainfall has decreased across the

Sahel region, further stressing the ecology of the region.[113] In particular, the three states

comprising Darfur have seen significant rainfall shortages.[114] Before the outbreak of

violence in 2003, Darfur has experienced decades of local, low intensity conflicts over

land, grazing and water rights. After the crisis, the GOS sponsored militias have used the

"scorched earth" tactic over a wide area across Darfur, forcibly displacing millions of

people, increasing food insecurity, and destroying the landscape.[115]

Environmental Issues at the Local Level
Water

The hydrogeology of the region comprises of four types of aquifers: deep

sedentary basin aquifers, *wadi* alluvial aquifers, volcanic rocks, and the Basement

Complex.[116] The deep bed aquifers Nubian and Umm Rawaba systems have moderate to

high recharge potential (North and South Darfur).[117] Underlying West Darfur, the

Basement Complex has more limited groundwater resources and much lower recharge

than the NAS or Umm Rawaba.[118] The Nubian Aquifer System (NAS) is the largest in

the world and crosses into Egypt, Libya, Chad and Sudan.[119] While Egypt and Libya

have utilized this fossil water for agricultural purposes, Sudan and Chad have mostly left

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[112] Fadul (2004), *op cit*, p. 34
[113] UNEP (2007), *op cit*, p.9.
[114] Ibid, p. 9
[115] UNEP (2007), *op cit*, p. 75.
[116] The deep bed aquifers consist of Nubian Sandstone, Paleozoic Sandstone, and Umm Rwaba Series. The Nubian Sandstone aquifer is the largest one in the region. Additionally, a *wadi is* a dry riverbed that is full during the rainy seasons.
Tearfund (2007). Darfur: water supply in a vulnerable environment, USAID, UNEP, DFID**:** 1-20. *op cit*, p. 4
[117] UNEP (2007) *op cit*, p. 223.
[118] Tearfund (2007) *op cit*, p. 4
[119] Ibid, *op cit*, p. 244.

theirs untouched.[120] The management of the NAS provides an opportunity for these four

nations, particularly Chad and Sudan, to cooperate over water allocation.

   Land

   Since the outbreak of the conflict in 2003, land grabbing has increased in Darfur

amongst Arab tribes. Members of the janjaweed are allowed to take and claim lands left

by the agricultural tribes. "Most of the 'Arab' groups involved in contemporary militia

activities including land grabbing are what we might call Abbala remnants, with weak

historic claims to tribally defined territories, and traditions of migration and settlement to

the east and south."[121] However, the issue of land has been in contention for decades.

   The current land tenure regime operating from Khartoum is highly centralized and

unfavorable to marginalized groups. In their legal system, based on Islamic (Shari'a) law,

the GOS governs land with more than 25 separate legislative acts, comprising more than

600 relevant sections in their legal code.[122] Under President Nimeiri's and e-Bashir's

administrations, the Civil Transaction Act (1984) and its Amendment (1990), the

Regional Government Act (1985), the Encouragement of Investment Act (1981), and the

Petroleum Resources Act (1972) all centralized the state's control over land resources.

(Please see appendix for a list of laws that govern land in some manner.) As a result, land

grabbing, marginalization, favoritism for the politically connected, and unsustainable

land practice became the norm.

   Under these Acts, the GOS centralized the land tenure system by establishing a

land registry that excluded significant portions of the population, controlling the land-use

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[120] Ibid, *op cit,* p. 244
[121] De Waal (2005) *op cit*, p. 190.
[122] Gordon, Carey N, p. 143.

rights of private individuals, and invalidating traditional land tenure regimes.[123] Thereby,

the GOS have the power to distribute land rights for their development purposes, which

includes large-scale mechanized farming, and reclaim any the property has been

abandoned for over a year.[124] Furthermore, the law allows two significant exceptions:

Khartoum can assign property rights to individuals who can prove their usage of their

land over "a long period of time."[125] Importantly, the government can grant land rights to

people who have used the land for "any beneficial use" of the property in contest.[126]

Another significant aspect of this regime is that national law trumps any local

customary traditions.[127] Significantly, the GOS policies directly contradict the traditional

land tenure system, called *hawakeer* (singular, *hakura*) that are land grants from a *dar*,

the tribal homeland.[128] Furthermore, the abolishment of the 1971 People's Local

Government Act that provided regional checks and balances only added to the conflict

between these two land tenure systems.

Essentially, the land tenure regimes can be divided into three systems:

1. Government lands with community rights
2. Government lands with no community rights
3. *Hawakeer* (traditional)[129]

These three main land regimes continue to be in conflict with one another. For

instance, if a property is unregistered it becomes GOS property. Therefore, the GOS can

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[123] Gordon, Op Cit, p. 148.
[124] Ibid.
Ayoub, Mona. "Sudan: Land and Conflict in Sudan," *Conciliation Resources*. 2006. <http://www.c-r.org/our-work/accord/sudan/Land-conflict.php> Accessed 21 Oct 2007.
[125] Gordon, Op Cit, p. 148.
[126] Ibid, p. 148.
[127] Gordon, Op. Cit , p. 146
[128] Bradbury et al. (2006), *op cit*, pp. 89-90.
De Waal, Alex. "The Question of Land," *All Africa*. Posted to the web14 Jul 2006.
<http://allafrica.com/stories/200607140762.html> Accessed 10 Oct 2007
[129] Mohamed, Op. Cit, p. 59.

assign land rights and leases regardless of who may be occupying the land at the time or have traditional ownership.[130] Most importantly, the crisis in Darfur has severely impacted local capacity to traditionally manage land resources and stall economic development.

Environmental Issues at the National Level
Oil resources

As early as the 1950s, a handful of oil fields were discovered in Sudan.[131] Then in 1976, much larger oil reserves were discovered mostly concentrated in the southern regions.[132] A few years later, Chevron and then Total corporations attempted to develop the oil fields for production.[133] However, in 1983 conflict erupted over the politicized redistricting of the oil fields, disputes over revenue allocation, disagreements over oil refinery locations, and forceful removal of Southern Sudanese (predominantly non-Arab) from their lands without compensation.[134] The result was a brutal civil war from 1983 that ended with the signing of the Comprehensive Peace Agreement (CPA) on January 9, 2005.[135] Importantly, the CPA included a Wealth Sharing Agreement (WSA) that deals with land, oil, and taxes that will be implemented in the time between the CPA and elections on southern succession in 2010.[136]

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[130] De Waal, Op Cit, p. 1.
[131] Shankleman, Jill. *Oil, Profits, and Peace: Does Business Have a Role in Peacemaking?* United States Institute of Peace Press: Washington, DC, 2006: p. 122.
[132] Gidley, Ruth. "Oil Discovery adds new twist to Darfur tragedy," *Reuters*. 15 Jun 2005. Lexis Nexis.
[133] Shankleman, Op Cit, p. 122.
[134] Ibid, p. 120
[135] Ibid, p. 121
[136] Ibid, p. 127

As part of the CPA, in 2005, Khartoum established the National Petroleum Commission (NPC) who manages the oil concession contracts.[137] Additionally the NPC oversees the equal resource distribution from oil revenues between the GOS and GOSS.[138] However, GOSS has received little monies to date.[139]

In Sudan, State-owned oil companies have the most presence in the industry in both production and exploration. Most major Western companies leaving the country due to the civil war in the South, U.S. economic sanctions, and domestic divestment pressures.[140] China, India, and Malaysia all have oil interests in Sudan, but China has the most influence with GOS.[141] Sudan is the 3rd major producer of oil in Sub-Saharan desert behind Nigeria and Angola.[142]

Furthermore, the oil revenues comprise about 50% of the GOS's export income and are projected to increase in 2007.[143] However, most of the revenues remain concentrated in the states surrounding Khartoum, further marginalizing outlying states, Darfur included.[144] This lack of economic diversity in the country has enhanced the rent seeking by elites, mostly Arab National Congress Party (NCP) members. Also, oil revenues have been used to buy weapons for the Darfur campaign.[145]

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[137] The NPC also monitors for duplicate concessions, meaning the same block has more than one concession. Ibid, p. 130.
[138] Shankelman, *op cit*, p. 127.
[139] ICG N°130 (2007), *op cit*, p. 2
[140] Ibid, p. 32
[141] Goodman, P. S. (2004) "China Invests Heavily In Sudan's Oil Industry:
Beijing Supplies Arms Used on Villagers." The Washington Post **Volume**, A01 DOI: *op cit*, p. A01
[142] Ibid, p. 16
[143] Ibid, p. 40
[144] Most of the economic growth is also concentrated in these states surrounding Khartoum, thereby increasing their tax base. Most of the public works projects remain in these areas. World Bank. Last accessed 24 Apr 2008
<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/SUDANEXTN/0,,menuP
K:375432~pagePK:141132~piPK:141107~theSitePK:375422,00.html>
[145]Goodman, P. S. (2004) "China Invests Heavily In Sudan's Oil Industry:
Beijing Supplies Arms Used on Villagers." The Washington Post **Volume**, A01 DOI: *op cit*, p. A01

Adding a new twist to the Darfur conflict was the discovery of oil in 2005, concentrated in southern Darfur.[146] The evidence suggests that the discovery of oil has led to the increased land grabbing and village burning by the Janjaweed.[147] Despite this discovery of resource wealth, most likely Darfurian locals have no knowledge of the oil reserves beneath their lands.[148]

In southern Darfur, the Block 6 concession rights belong to China.[149] The foreign presence has not gone unnoticed. Recently, the Justice and Equality Movement (JEM), one Darfurian rebel faction, have attacked Chinese held oil fields in neighboring Kordofan state.[150] The rebels wanted to send a message to China, viewing them as instigators of the violence against them due to their allegiance to Khartoum.[151] The increasing attacks against Chinese oil and infrastructure workers present a cause of alarm due to the heightening violence in the region.

Environmental Governance

Also, environmental governance is weak and spread out over several institutions. Approximately 7 Ministries coordinate environmental activities: Ministry of Environment and Physical Development, Ministry of Tourism and Wildlife, Ministry of Agriculture and Forestry, Ministry of Animal Resources, Ministry of Irrigation and Water Resources,

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[146] Gidley, *op cit*.

[147] Gidley, *op cit.*

[148] The WSA deals with land, oil and taxes in North and South Sudan. As a result, each oil-producing state is supposed to receive 2% of revenues. Additionally, revenues above a benchmark price will be deposited into the Oil Revenue Stabilization Account and the balance will be divided equally between the GOS and GOSS governments. Also, the Future Generations Fund will be established once oil production reaches a threshold of 2 billion barrels/day. Unfortunately, Darfur is not written into this agreement. Whether or not it will receive any royalties from oil concessions remains to be seen. The current crisis will ensure that any monies remain in the central government to further their military campaign.
Shankleman, *op cit*, p. 127

[149] Goodman, P. S. (2004) "China Invests Heavily In Sudan's Oil Industry:
Beijing Supplies Arms Used on Villagers." The Washington Post **Volume**, A01 DOI: *op cit*, p. A01

[150] (2008). Sudan: Chinese envoy urges former Darfur rebels to protect peacekeepers. Sudan Tribune.
Paris., *op cit*, p. 1

[151] Ibid.

the Ministry of Health, and the Ministry of Industry.[152] All of the ministries meet under

the Higher Council for Environment and Natural Resources, except that the group has not

met to date.[153] These ministries lack coordination, cooperation, information sharing, and

some are underinvested.[154] Environmental issues are not a high priority during a time of

violent conflict.

Climate Change

Only recently has the issue of climate change entered the context of the Darfur

conflict. The first noted climate changes occurred in the mid-1980s with the decreased

rainfall amounts in the Sahel region, especially in the states of Darfur and Kordofan.[155]

The 1984-1985 drought was especially brutal to pastoralists, where the majority of their

animals perished, adding economic insecurity to their tribes.[156] Studies by the

International Panel on Climate Change (IPCC) and UNEP have tracked this decrease in

rainfall across the Sahel region and also predict a continued reduction in rainfall

amount.[157]

Furthermore, according to UNEP, the desert has shifted 50-200 km southwards

based on rainfall and vegetation records since 1930, thereby increasing desertification

significantly.[158] The reoccurring droughts and the increasing desertification initiated the

migration of the pastoralists into the more fertile regions in the central and southern parts

of Darfur. As a result, previous land use agreements between pastoralists and

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[152] UNEP, *op cit*, p. 297.
[153] Ibid, p. 303
[154] Ibid, p. 305
[155] Human Rights Watch. *Sudan- Darfur in Flames: Atrocities in Western Sudan*. April 2004, Vol. 16, No. 5, p. 7.
[156] *Darfur in Flames*, p.7.
[157] "Summary for Policymakers" (2007), *op cit*, p. 9.
[158] UNEP (2007), *op cit*, p.9.

agriculturalists disintegrated due to environmental degradation, thereby increasing

conflicts between the once symbiotic livelihoods.[159]

While the conflict in Darfur has many proximate causes, the root causes of the conflict
stem from the government's failure to manage, equally distribute, increase access to, and
protect the quality of natural resources critical to livelihood security, coupled with the
exogenous factor of climate change accelerating environmental degradation.

C. Rationale for Intervention

Stakeholder Analysis of Current Situation
❖ **PRIMARY STAKEHOLDERS**
Darfur Internally Displaced People (IDPs), Refugees and Civilians: Since the conflict

erupted in 2003, over 2.0 million Darfurians have been internally displaced. This

stakeholder group is interested in gaining land security, access to water and food, and

some kind of compensation for the atrocities committed against them.[160] Once the

conflict has been resolved, they will want to return to their lands. While they have the

right to return to their property, they face several key problems. First of all their lands

have been destroyed in the conflict by scorch and burn tactics. Secondly, illegal squatters

have occupied the land with the blessing of GOS. Finally, landscape alteration, through

chopping down trees, creates an impossible identification of their lands. This presents a

significant problem for refugees and IDPs.

Additionally, the rights of women must be considered in any environmental

governance regime, for their livelihoods depend on access to natural capital. Due to the

conflict, many women have become widows. If they do not have access to property

rights, they and their children will become impoverished and landless. Overall the IDP,

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[159] UNEP, *op cit*, p. 9 & Faris (2007), *op cit*, p. 67-68.
[160] International Crisis Group (2007), *op cit*.

refugees, and civilians have very low influence and power with the central government for gaining any reform and conflict resolution.

Government of Sudan: The main political party, the National Congress Party (NCP), controls the decision-making in the central government. They want to maintain their centralized power and exclude competing groups. Furthermore, the GOS has significant interests in the lands of Darfur, particularly for potential oil resource access; for mechanized agriculture purposes; strategic positioning for the proxy war against Chad; and for maintaining general chaos in the region. They want to maintain their centralization of political power, decision-making, and control of natural capital. After the peace settlement with Southern Sudan (now called Government of South Sudan-GOSS), they do not want to re-distribute any more natural resources with non-NCP members, especially oil revenues and territory. They face two important elections in 2009, which include a nation-wide election and the 2011 referendum with GOSS. The NCP does not want to lose political power.

Rebel Groups

Initially, this group of mostly ethnic Furs mobilized in 1987, responding to the Arab militias organized and armed by Khartoum.[161] The triggering event was caused by a food crisis from a severe drought and political changes in the central government.

In 2003, the main grievances cited by the SLA for rebellion were the marginalization of Africans from modern development, wealth, and political power; the lack of proper infrastructure and water management; and the protection of their land rights from the

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[161] "Who are Sudan's Darfur rebels?" *BBC News*, Last updated: Friday, 12 October 2007. Last accessed 25 Feb 2008.

central government and opportunistic Arabs.[162] Furthermore, they are interested in

gaining more political power, security from the Janjaweed attacks, compensation from

the government for their atrocities, and maintaining military strength in the region.

Importantly, in 2005, the SLA split along tribal lines. The two leaders, Minni Arkou

Minawi (ethnic Zaghawa and military leader) and Abdel Wahid Mohammed Ahmed el-

Nur (an ethnic Fur political leader) disagreed on political issues such as power sharing.[163]

1. Sudan Liberation Army/Movement (SLA/Minawi): The major difference

between the SLA/M and other SLA factions is that the SLA/M group signed the DPA.

Minawi is concerned with the implementation of the agreement since his reputation as a

rebel leader depends on its success. Both groups have very high importance and influence

in the problem.

2. Justice and Equality Movement (JEM): Dissatisfied with the SLA, this

coalition of rebel factions is interested in protecting their land rights, realigning political

structures in Khartoum, particularly in establishing Darfur as an autonomous state.[164]

They want to increase their political power, as well as their military strength.

Furthermore, JEM wants to maintain their mutually beneficial relationship with Chad.

Their influence in the problem is medium, due to their weaker stance among the

Darfurians. However, their importance is very high to resolving the problem due to their

potential as spoilers, their relationship with Chad, and their necessary participation in any

Darfur peace agreement.

3. National Redemption Front (NRF): This limited military coalition between the

JEM and other splinter rebel factions are interested in increasing their military presence

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[162] "Darfur: Revitalizing the Peace Process," *op cit*, p. 2.
[163] "Who are Sudan's Darfur rebels?" *op cit.*
[164] "Darfur: Revitalizing the Peace Process," Op Cit, p. 2.

in the region, as well as their political power. Currently, they have some influence in the region, but are of high importance for any successful resolution of the problem.

4. Other Rebel Factions

The divide and rule tactic practiced by the GOS, as well as differences in ideology, have split the rebel movement into several different groups that have their own agenda. So far, about 26 different groups have been counted.[165] At this point, the rebel groups should be considered potential *spoilers* in the peace process due to the significant fractionalization.[166]

Popular Defense Force, aka "Janjaweed": This Arab militia group is very interested in gaining territory for their pastoralist society, and maintaining their military power over the non-Arab Darfurians. Their influence with the GOS is low due to their "non-affiliation" status with the NCP. However, their inclusion in peace negotiations is crucial, as well as for determining land rights.[167] The Janjaweed should also be considered a potential spoiler in the peace process.

❖ SECONDARY STAKEHOLDERS:
Sudanese Political Opposition Parties: The Minority Political Parties in Sudan consist of the Umma Party, the Communist Party, and the Popular Congress Party.[168] They are

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[165] <http://news.bbc.co.uk/2/hi/africa/3702242.stm>

[166] For the purpose of this paper, I will use Stephen John Stedman's definition of *spoiler*: "leaders and parties who believe that peace emerging from negotiations threatens their power, worldview, and interests, and use violence to undermine attempts to achieve it." Also, the influence of Chad with the rebel groups, particularly the JEM is very important to sever. Chad's proxy war with Sudan, using the Darfur rebel groups, will continue to undermine the peace process.
Stedman (1997) *op cit*, p. 5.

[167] The term janjaweed (also spelled janjawiid) stems from the historical reference to Chadian Abbala militias. During the mid to late 1980s, this group used West Darfur as a base to strike in Sudan as well as provoking minor clashes in Darfur. As a result, they also armed some of the Darfurianan Abbala to help achieve their goals. Furthermore, the term has a negative connotation, loosely meaning "the devil on horseback."
De Waal, "Who are the Darfurianans?" p. 191.

[168] The position of the Democratic Unionist Party remains unclear according to the International Crisis Group, and is therefore not included in this group.

interested in government reform, ousting the NCP from power, and peace negotiations. Their importance is medium, due to their weaker political power. However, they are key players in negotiations since they are sympathetic to some rebel causes. If any type of land regime is proposed, they must be included in order to ensure implementation.

Sudanese People's Liberation Movement (SPLM): Initially, before 2004, the SPLM supported the rebellion in Darfur but ended before the signing of the Comprehensive Peace Agreement with Khartoum. However, they are showing signs of reintroducing support for Darfur rebels.[169]

Government of South Sudan (GOSS): Entered into a power sharing arrangement with the GOS in 2005. As part of the agreement, the provision included wealth-sharing agreements from oil exports and elections in 2009 with a possible secession in 2011.[170] They could be potential ally for environmental efforts.

Smaller Arab tribes (landless): Recent developments in the conflict have shown that an Arab-Arab fractionalization is occurring, such as between the Terjem and the Mahria tribes.[171] They are both interested in the Fur lands gained from the conflict. Both want to maintain the integrity of their territorial claims. However, greed over the spoils of war drives them to fractionalization. As a disenfranchised group, they are highly important for peace negotiations (potential spoilers) but their current influence is low.

"Darfur: Revitalizing the Peace Process," p. 11.
[169] Ibid, p. 11.
[170] ICG. *A Strategy for Comprehensive Peace in Sudan*, Op cit, p. 2.
[171] Gettlemen, Jeffrey. Arab Tribes Battling in Darfur Over Spoils of War," *New York Times*. 3 Sept. 2007.
        Online <www.nytimes.com>.

Arab Tribes (contain land rights): The Baggara tribe is the main pastoralist tribe in the region, but has refrained from participating in the conflicts.[172] They have land rights and access to resources. Their interests will need to be considered in any negotiations process.

❖ **EXTERNAL STAKEHOLDERS:**

People's Republic of China: Out of the external stakeholder group, China bears the most influence with the GOS and supports their policies. Currently, China is working closely with the NCP to develop their oil interests, as well as improving basic infrastructure and building dams.[173] China has massive oil investments in Sudan (specifically Petrodar Operating Company), buying two-thirds of GOS oil.[174] Additionally, the untapped oil in southern Darfur poses an ethnical problem for the rapidly developing nation.[175] China is interested in the land rights for oil fields, and they want the NCP to remain in control.[176] However, international pressures for China to nudge the GOS towards reform in Darfur are significant, especially with the 2008 Olympics approaching.[177] China understands the international political consequences of their involvement with oil in Darfur.

Recently, China broke with their tradition of non-interference with sovereign rights of nation by warning the GOS; "the world is running out of patience over what's going in Darfur."[178] China can play a very important role in ending the conflict in Darfur. Any negotiations for environmental governance will need to include China due to their

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[172] Darfur in Flames, p. 6.
[173] Gidley, p. 3.
[174] Pan, Esther. "China, Africa, and Oil," *Council on Foreign Relations.* Last accessed 2/22/08
         <http://www.cfr.org/publication/9557/>.
[175] Ibid, p. 3
[176] Economically, China is a major trading partner with Sudan, importing 32% of Sudan's export production. <https://www.cia.gov/library/publications/the-world-factbook/geos/su.html>
[177] China wants to prove to the international community that it is a developed country, very powerful, and has the capacity to hold such a prestigious event.
[178] "China issues a warning to Sudan over Darfur crisis," Sudan Tribine. Wednesday 30 January 2008 15:50.<http://www.sudantribune.com/spip.php?article25753>

high influence. Most importantly, China is highly influential with the GOS both politically and economically.

African Union: The African Union is still improving their capacity as a major political institution on the continent. In the Darfur conflict, the AU has tried to increase their influence in the region as the main peacekeeping force. However, the scope of the conflict and their lack of capacity have made peacekeeping a challenge.[179] Also, the GOS's stubbornness to accept UN peacekeeping troops has boosted the significance of the AU in the region.[180] This position has placed the AU in a medium level influential position with the GOS but has increased their importance on the international scene to a higher level than in other African conflict situations. [181] However, in a post-conflict setting, they will be crucial for stabilizing the region and prevent any conflicts from erupting over land tenure issues. The AU will have a vested interest in a sustainable peace in Darfur and would aid in land reforms.

USA: The Bush Administration considers Sudan a high foreign policy priority.[182] The US wants to end the Darfur crisis "through a political settlement, providing humanitarian assistance to vulnerable populations, enabling the deployment of an international peacekeeping force, and promoting democracy in Sudan."[183] While the US remains a strong presence in the international scene, it lacks significant sway with the GOS,

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[179] Vogt, Heidi. "Attack on African Union forces in Darfur could hurt peacekeeping effort," International Herald Tribune. 1 Oct 2007. <http://www.iht.com/articles/ap/2007/10/01/africa/AF-GEN-Africa-Darfur-Fighting.php> Accessed 10 Oct 2007.

[180] At this time, Khartoum will only accept an AU-UN hybrid force.

[181] In early October, the attacks on the AU peacekeeping force have seriously under-minded their capacity for providing internal security for civilians.
<http://www.iht.com/articles/ap/2007/10/01/africa/AF-GEN-Africa-Darfur-Fighting.php> Accessed 10 Oct 2007.

[182] U.S. Department of State. "U.S. Policy on Sudan," *Bureau of African Affairs*. Washington, D.C.: 25 Jul 2007. Last Accessed 21 Oct. 2007 <http://www.state.gov/p/af/rls/fs/2007/91113.htm>.

[183] Ibid.

especially when compared to China. This lack of influence with GOS is mostly due to the

US position on the crisis in Darfur, labeling of the conflict as "genocide." While only a

word, this policy position has significant consequences, which includes polarizing the

interest groups and creating an Anti-Arab sentiment that further alienates Arab countries.

This sentiment is not helped by the current war in Iraq and Bush's position on Israel. As a

result, the US has imposed economic sanctions against individual Sudanese and

government-owned companies that to pressure Khartoum to end the violence in

Darfur.[184] However, the US will continue to collaborate with the GOS on counter-

terrorism issues, since fighting the "War on Terror" is paramount for the Bush

Administration.[185]

The US faces domestic pressures to intervene in Darfur as well. Numerous US-

based NGOs remain active in preventing further genocide and atrocities in Darfur. The

US has strong domestic pressure to divest in Sudan, intervene to prevent further

genocide, and encourage Khartoum to accept an international peacekeeping force in

Darfur.[186] The US remains a critical player in bringing about land reform in Darfur since

they can use their vast resources to implement policies.

Neighboring Countries:

1. Chad: The conflict in Darfur has involved Chad along ethnic and political

lines.[187] Chad has used the rebellion as a proxy war with the NCP by arming the JEM

against the Arab militias.[188] Chad has approximately 200,000 refugees on their soil, and

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[184] Ibid.

[185] U.S. Department of State. "The Future of Sudan," *Bureau of African Affairs*. Washington, D.C.: 15 Oct.
2007. Last Accessed 21 Oct 2007 <http://www.state.gov/p/af/rls/rm/93613.htm>.

[186] Ibid, p. 16.

[187] Chad's ruling party is dominated by the Zaghawa ethnic group. "Darfur: Revitalizing the Peace
Process," *op cit*, p. 18.

[188] "Darfur: Revitalizing the Peace Process," *op cit*, p. 11.

Arab militias are consistently attacking the camps.[189] The nation is a key player in

negotiating a peace treaty, since it may act as a spoiler.[190] Also, Chad can help represent

the Zaghawa tribe in their desire for land rights. Chad has significant influence in the

area, particularly with the JEM and can help persuade the rebels into either escalating the

war or a ceasefire. However, Chad is facing a crisis on their own soil, as rebels attacked

the capital earlier in February.[191]

     2. Egypt: As Sudan's neighbor, Egypt is concerned with regional stability, water

resources from the Nile River basin, and maintaining a working relationship with

Khartoum.[192] The country has a bilateral agreement with Sudan for water resources in the

Nile River Basin.[193] They want to maintain a working relationship with Sudan to protect

their water resources. With the discovery of the underground lake, Egypt has pledged to

drill the first 50 wells.[194] Additionally, Egypt also has concerns about Darfurian refugees

entering into their country and the threat to national security.[195] As a result, Egypt has

medium influence but high importance in the negotiating process.

     3. Libya: This neighbor of Sudan has attempted to mediate between the GOS and

rebel groups. Libya opposes the use of UN peacekeeping troops in the region.[196]

However, they are open to the presence of an AU force, especially for patrolling the

borders. The country has a high influence and high importance with the GOS and the

rebels.

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[189] Ibid, p. 18.
[190] Ibid, 1.
[191] <http://news.bbc.co.uk/2/hi/africa/7223760.stm>
[192] Ibid, 20.
[193] Darfur's New Security Reality, *op cit*, p. 20.
[194] <http://abcnews.go.com/Technology/WoodruffReports/Story?id=4528101&page=1>
[195] Darfur's New Security Reality, *op cit*, p. 20.
[196] "Darfur: Revitalizing the Peace Process," *op cit*, p. 18.

4. <u>Eritrea</u>: In the region, Eritrea plays an important role in initiating negotiations to end the violence. Eritrea is interested in maintaining a stable relationship with Khartoum since it sees Ethiopia as a more significant threat.[197] Also, the country is interested in Sudan's oil exports. This could complicate any land rights negotiations for the indigenous groups, since their lands could be on potential oil fields.

5. <u>Central African Republic (CAR)</u>: Similar to their neighbors, the CAR is interested in regional stability, and their own country's stability. The influx of refugees and occasional rebel skirmishes on their boarders heightens the tensions with the GOS. In order for any kind of land rights negotiations to occur, CAR will need to meet with other regional actors to stop the violence. CAR has high influence and high importance in this situation.

<u>Japan</u>: Sudan exports almost 50% of its products to Japan, significant trading partner.[198] Japan could be persuaded by the US government to comply with environmental intiatives. Their economic relationship with Sudan could convince the GOS to comply.

<u>United Nations (UN)</u>: The UN has tried, on numerous occasions, to send in peacekeeping troops into Darfur to end the violence. A joint UN-AU peacekeeping force will be deployed in early January to help stabilize the region and protect civilians from attacks.[199] However, since the arrival of UN troops, the violence has not stabilized.[200] In this case, the UN has high importance but medium influence in the current situation.

<u>World Bank (WB)</u>: This financial institution has interests in a joint effort with the UN to pinpoint urgent and long-term sustainable development goals in Sudan. Key development

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[197] Ibid, p. 18.
[198] https://www.cia.gov/library/publications/the-world-factbook/geos/su.html
[199] Vogt, Op. Cit.
[200] Charbonneau, Louis. "Situation in Darfur is deteriorating - UN's Ban," *Reuters*. 21 Feb 2008. Last accessed 24 Feb 2008 <http://africa.reuters.com/top/news/usnBAN124222.html>

policies include: increased transparency, reduce corruption, and sustainable development. With the Comprehensive Peace Agreement (CPA) between the GOS and the Government of South Sudan (GOSS) government, the WB has a financial interest in the success of this agreement.[201] The World Bank could also fund and provide technical assistance for land reform any programs in Darfur. They are key players in any post-conflict reconstruction efforts.

Major Donor Countries: The major donor regimes: EU, France, Netherlands, Norway, Switzerland: all have significant economic, political, and social sway over the conflict in Darfur. Switzerland has economic interests in the GOS oil company. Their influence is high and their importance is medium, but should be considered as potential allies for advocating for indigenous land rights.

Oil Corporations: Swiss company Clivenden and China National Petroleum Corporation (CNPC), India's Oil and Natural Gas Corporation (ONGC), Malaysia's Petronas, Total SA, Marathon Oil Corporation, and the Kuwait Foreign Petroleum Company[202] all have oil interests in Sudan and want to maintain good relations with GOS.[203] They will resist any reforms if their economic interests are jeopardized, especially with the oil concessions in Southern Darfur. Through outside pressures, MNCs could be convinced to negotiate with the GOS for better practices in Darfur. However, the CNPC, as a state-owned company, is beholden to the Chinese government's interests.

NGOs: Primarily from international countries, NGOs are working in refugee camps to ensure that these people are receiving basic humanitarian aid and security. They have a

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[201] *World Bank Group*, Op. Cit.
[202] Last accessed 16 Mar 2008 <http://www.eia.doe.gov/emeu/cabs/Sudan/Profile.html>.
[203] Clivenden owns 37% of GOS owned oil company ABCO.
Gidley, Op Cit, p.1.

high interest in the welfare of the refugees, but have low influence with the GOS and medium importance. They should not be disregarded from the negotiating tables, since they have the capacity to aid and represent the refugees' interests. Furthermore, humanitarian organizations must be very careful with what information leaks to the international community. They have to maintain a working relationship with the GOS since they are there at their invitation. Without their presence in Darfur, the humanitarian situation would quickly deteriorate.

Arab League: With the conflict, the Arab league has played a limited role in bringing about peace. Sudan, as the gateway between North Africa and East Africa, has decided to align themselves with the Arabs. As a result, the GOS wants to strengthen their connection to the Arab league for political, social, economic, and ideological reasons. [204] The Arab League should not be isolated from the peace process. In particular, Saudi Arabia, being another majority Sunni Muslim country and an import and export partner, could have significant influence with Khartoum.[205]

[See Appendix: Conflict Mapping]

D. Problem Analysis

Environmental Causes of Conflict
Weak government institutions: Overall, the GOS suffers from a lack of capacity for environmental governance due to weak institutions and corruption. Government corruption and the breakdown of the Native Administration allowed (and even encouraged) the breakdown of relations between the different ethnic groups in the

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[204] Johnson, p. 141
[205] Tradeport. Sudan. Last Accessed 16 Mar 2008. <http://www.tradeport.org/countries/sudan/01grw.html>

area.[206] In the environmental sector, governance is weak on both the national and local

scales.

Degradation of Natural Resources: With the rural populations' livelihoods tied so

closely to the natural resource base, any changes in environment can cause stresses

between competing users. While the populations have adapted to environmental changes

historically, the influence of globalization, climate change, and technology have made

this adaptation difficult. The involvement of the GOS in exploiting natural resources,

centralized and conflicting ownership paradigms (private versus common property),

corruption, and instigation of ethnic hatred have all lead to the breakdown of social

capital.

In addition, conflicts in Sudan stem from environmental degradation resulting

from unsustainable land use and climate change.[207] "Ecology, including land, natural

resources, agricultural commodities, and changes to all these, is central to the on set and

duration of conflict in Sub-Saharan Africa."[208] As a result, Darfur suffers with several

environmental factors: environmental variability, reoccurring droughts, desertification,

food shortages, biodiversity loss, and water shortages: that are very vulnerable to climate

change.[209] Desertification in the north has increased the pressure on land use, thereby

increasing tensions between pastoralists and agriculturalists. Factors increasing the

demand for land include: the population increase from the migration of pastoralists from

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[206] As mentioned earlier, the GOS considers peace in Darfur to be a political threat. The Fur tribes held the political power in the region and they are favorable towards the NCP and Arabization policies.
ICG N°125, *op cit*, p. 6.
[207] UNEP (2007), *op cit*, p.9.
[208] Lind (2002) *op cit,* p. 18.
[209] Ibid, p. 87.

the North; the increase of livestock populations; the decrease of arable lands from

desertification; and the increase of unsustainable, mechanized farming practices. [210]

Disintegration of Social Capital: With the loss of trust and fear, the social capital has

disintegrated.[211] Tribes have disregarded traditional conflict resolution mechanisms such

as *judiyya*, the Darfurian customary mediation.[212] In the past, this traditional mechanism

was communally sponsored based on third party mediation. The mediators, called

ajaweed, were tribal elders trained in customary practices and laws.[213] Their role was to

pressure groups into reaching a settlement based on the *Ajaweed*'s recommendations.

Importantly, another type of *juddiyya* is controlled by the GOS to exert their political

power.

Today, the government-sponsored *juddiyya* contains NCP appointees in these

Ajaweed positions who remain loyal to the central or state governments.[214] Therefore,

any disputes held in these government created forums will usually be ruled in favor of a

NCP loyalist. These state-sponsored mediation mechanisms are not effective at resolving

conflict. Additionally, the traditional *juddiyya* failed to mitigate conflict due to their lack

of capacity to handle the increasing pressures from the GOS, adapt to drought,

accelerated environmental degradation, migration of pastoralists, and the influence of

international actors between tribes. Significantly, from an environmental perspective,

these conflict resolution mechanisms lack the capacity to handle climate change impacts,

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[210] According to UNEP, based on rainfall and vegetation records since 1930, the desert has shifted 50-200 km southwards.
UNEP. *Sudan: Post-Conflict Environmental Assessment*. Nairobi, Kenya: June 2007, p.9, p. 85.
[211] "At its core, social capital describes relations of trust, reciprocity, and exchange; the evolution of common rules; and the role of networks." Adger (2003), *op cit*, p.389.
[212] Bradbury, M. a. J. R., Michael Medley, Kwesi Sansculorrw-Greenidge (2006). Local Peace Processes in Sudan: a baseline study. London/Nairobi, Rift Valley Institute., p. 88.
[213] Bradbury et al, *op cit*, p. 88.
[214] Ibid.

particularly droughts. Those closest to natural capital, particularly land and water, will be most vulnerable. Without strong social capital to mitigate tensions, conflict will erupt as it has in Darfur.

Resource Curse: On the national scale, the resource wealth situation, or "resource curse" has contributed to the root causes of the conflict in Darfur by weakening the central government regime due to rent seeking and state exploitation. Aspects of the oil concession system still contribute to the tensions between the different stakeholders for several reasons. The oil concession system is highly centralized and controlled by Khartoum. Oil concession documents, called production-sharing agreements (PSA) are not always publicly available either through the government or the corporation. Generally, oil contracts propagate conflict due to their lack of transparency about which companies are involved in the concessions, no disclosure of length of contracts, how to allocate the revenues, and the impact on environmental and social arenas.[215]

Land Tenure Conflicts: Additionally, weak institutions perpetuate environmental-based conflicts due to the inability to define property rights of lands. When the state fails to define property rights, the unclear boundaries lead to increased tensions. Conflicts can arise over differences between types of property rights between the state and the indigenous groups, and even what it means to "own" land.

As a result, Darfur suffers from the *resource capture* of valuable arable land by political elites based in the capital, Khartoum and their Arab allies.[216] "…[E]xclusionary states, state elites and their allies have both the power and the incentive to exploit

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[215] Shankleman, *op cit*, p. 29

[216] Additionally, weak political institutions perpetuate environmental based conflicts due to the inability to define property rights of lands. When the state fails to define property rights, the unclear boundaries lead to increased tensions. Conflicts can arise over differences between types of property rights between the state and the indigenous groups, and even what it means to "own" land.

resource scarcities and manipulate social schisms to advance their narrow self-interests,

because the social costs of such policies are spread out across society while the benefits

are accrued by the narrow clique at the top."[217] The increased resource capture results

from to two major land tenure laws: the 1970 Unregistered Lands Act and the 1983 Civil

Transaction Act; and the abolishment of the 1971 People's Local Government Act that

provided regional checks and balances.[218] Under these Acts, the GOS centralized the land

tenure system and took away power from local institutions, known as *dars*.[219] As a result,

the GOS distributes land rights for their development purposes, and can reclaim any the

property has been abandoned for over a year.[220] This new regime concentrates the land

resources in the hands of a few, and ignores any previous indigenous land tenure systems.

Unfortunately for marginalized groups, refugees, and internally displaced peoples

IDPs), national law trumps any local customary traditions of land tenure.[221] However,

this indigenous system directly contradicts with the GOS land laws.[222] Prior to land

reform, the indigenous land system had a degree of flexibility with the different land

users in the region, especially for pastoralists. Currently, the legal abolishment of this

land tenure system, ethnic groups such as the Fur, the Zaghawa, Baggara, and smaller

Arab tribes (who often comprise the Janjaweed) will most likely have their lands

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[217] Kahl, Colin H. "Population growth, environmental degradation, and state-sponsored violence: the case of Kenya," *International Security* 23 n. Fall 1998: p. 6

[218] Internal Displaced Monitoring Centre. "Land legislation led to conflicts and displacements 1970-2004,"
  <http://www.internal-displacement.org/idmc/website/countries.nsf/(httpEnvelopes)/5EFEEA4DC892E862802570B8005AAE7C?OpenDocument> Accessed 4 Nov 2007.
UNEP. *Sudan: Post-Conflict Environmental Assessment*. Nairobi, Kenya: June 2007, p.189.

[219] A *dar* is the territory of a tribe where land is allocated to every member for cultivation. Fallow lands are often used as pastures for tribal members and shared with pastoralists. The chief is considered the guardian of the *dar*. Mohamed (2004) *op cit*, p. 58.

[220] Nucci, Domenico. "Study on arbitration, mediation and conciliation of land and property disputes," *Land and Property Study in Sudan*. Nairobi, November 2004.

[221] Ibid.

[222] Ibid.

occupied by someone else.[223] Due to their livelihoods being tied to the land, lack of

income alternatives and poverty will further deepen the environmental scarcity cleavages

between competing tribes.

In addition, the land degradation resulting from desertifications, over-grazing

from herd animals, unsustainable agriculture, and scorch-and-burn tactics have decreased

the quantity and quality of arable land. In turn, the demand for arable land increases

while the supply dwindles. Without any effective land tenure regimes, the demand cannot

be handled without conflict.

Demographic Changes: The influx of pastoral migrants from the Northern Darfur into

the central part of the region exacerbated tensions between the current occupants and the

newcomers by increasing the number of people competing for land, water, and grazing

rights. "Environmental scarcity is more likely to produce migrants than refugees, because

it usually develops gradually, which means that the push effect is not sharp and sudden

and that pull factors can therefore clearly enter into potential migrants' calculations."[224]

With the migration of pastoralists from north to south combined with an increase in

population density, increased the competition for scarce resources. "Demographic and

environmental stress can increase the level of grievances within societies, which in turn

can provide ruling elites with incentives and opportunities to exploit these grievances to

serve their own purposes."[225] The GOS understood these livelihood and demographic

tensions between Arab and African groups and exploited them by creating the Janjaweed.

For their reward, the Janjaweed, typically landless, can seize lands from the

predominantly non-Arab agriculturalists.

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[223] Gettlemen (3 Sept. 2007) *op cit*.
[224] Homer-Dixon, *op cit*: p. 295.
[225] Kahl, *op cit*, p. 4.

Also complicating matters is the population increase from the west, due to the influx of Chadian refugees.[226] Significantly, all of these groups are chronically impoverished, marginalized, and lack the capacity to improve environmental conditions. The population increase in Darfur and the decreasing amount of quality resources deepens the cleavages between groups and solidifying their grievances against one another.

Increasingly Scarce Water Resources: A significant problem in the Darfur crisis is the lack of accessibility to potable water resources for domestic, livelihood and humanitarian uses. A particular concern is the water resources underlying the refugee and IDP camps in West Darfur. Previous studies have shown that the aquifer has the potential to supply water for towns and villages, but not including the hundreds of thousands of camp inhabitants.[227] Darfur experiences rainfall during four months of the year and the geology is unfavorable for groundwater storage.[228]

Furthermore, on the government level, several different government ministries manage water resources. Also, the GOS favors dam projects and large-scale agricultural schemes that favor the *jellaba*.[229] These projects hurt small-scale users. Most of the water is accessed through digging wells, mataras (irrigation) and *wadis* (when filled with water) and boreholes.[230] Competing users include subsistence agriculturalists, pastoralists, and smallholder farmers for cash crops.[231] Control over these sources of

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[226]De Waal, *op cit*.
[227] Camps provide about 15 liters of water per person everyday. Tearfund (2007), *op cit*, p.8.
[228] Tearfund. "Darfur: water supply in a vulnerable environment," *Phase Two of Tearfund's Darfur Environment Study*. 25 October 2007, p. 6. Last accessed 13 December 2007 <http://www.tearfund.org/darfurwatervulnerability>
[229] UNEP, *op cit*, p. 244-245.
[230] Ibid, *op cit*, p. 243.
[231] Mohamed (2004), *op cit*, p. 63.

water has been a source of contention between rebel groups, janjaweed, local tribes, towns, and humanitarian camps.[232]

Additionally, humanitarian camps rely heavily on these sources of water to provide basic needs to IDPs and refugees. Many of the camps are located in arid locations where water reliability is limited. Current water usage is not sustainable, especially if the camps remain long-term.[233] Humanitarian camps often lack the capacity to monitor water-usage and groundwater levels due to money, time, and personnel constraints. Furthermore, the lack of water resources forces camp residents, usually women, to leave the compounds. As a result, women are frequently attacked and raped.[234] The lack of water resources is a humanitarian, livelihood, and security issue in the region.

Also, some of the larger refugee camps (such as Kalma camp with 90,000 inhabitants) have a more significant water problem than other smaller camps. The high water usage combined with the drought, is depleting the water resources faster than they can recharge. Specifically, in the areas of Kalma, Abu Shouk and Al Salaam water in the *wadis*[235] may or may not adequately recharge the Basement Complex aquifers supplying these camps.[236] As more refugees enter the camps escaping the increased violence, the water resources will be depleted even faster.

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[232] ICG (2007) N°134, *op cit*, p. 7.
[233] UNEP (2007), p. 243
[234] Smith et al (2007), *op cit*, p. 12.
[235] According to Merriam-Webster dictionary, a "wadi" in Arabic means "the bed or valley of a stream in regions of southwestern Asia and northern Africa that is usually dry except during the rainy season and that often forms an oasis; and two, a shallow usually sharply defined depression in a desert region." Last accessed 14 December 2007
<http://www.m-w.com/dictionary/wadi>.
[236] Ibid, p. 8.

Another factor to consider in water resource management in the region is the arrival of approximately 26,000 peacekeeping troops in 2008.[237] Peacekeeping troops will use more water than current refugees. Some estimates place consumption as high as 40 times as much as a typical Darfurian or the equivalent of another 1.04 million displaced people.[238] However, due to the political situation in Sudan, humanitarian organizations are unsure when the troops will be deployed, thereby complicating their water management plans.

Furthermore, a lack of conservation education impacts how refugees view water, as a "free" resource. According to one report, 94% of surveyed families used more water in the camps than in their previous homes.[239] Currently, refugees use water to make bricks to build their homes since lumber is not available.[240] This brick-making process uses a significant amount of water. Also, the water is handed out for free to the refugee population, so they are inclined to use as much as desired. As a result, humanitarian organizations are seeking methods to promote a more sustainable livelihood, especially given the severe drought conditions in the past. The Darfur refugee camps demonstrate the delicate balance between supporting livelihoods and sustaining the environment to help manage the crisis.

Lack of Climate Change Adaptation Strategies: Due to Darfur's remote location, marginalization from the central government, and lack of development, the region was ill prepared to deal with the climate change impacts over the past 20 years. The implications

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[237] "SUDAN: Water shortage fears in Darfur camps," Reuters. 10 December 2007. Last accessed 14 December 2007
<http://www.alertnet.org/thenews/newsdesk/IRIN/eb75a66d81470bee71548a393acdff95.htm>.
[238] Ibid.
[239] <http://www.alertnet.org/thenews/newsdesk/IRIN/eb75a66d81470bee71548a393acdff95.htm>.
[240] Ibid.

were seen was early as the 1980s. Social scientist Dr. Alex de Waal met with an Arab

sheikh, Hilal Abdalla, who described the breakdown of relations between pastoralists and

farmers due to the drought and decreased supply of arable land.[241] "Farmers who had

once hosted his tribe and his camels were now blocking their migration; the land could no

longer support both herder and farmer."[242] By blocking the migration of pastoralists,

many of them lost their stock and turned to farming on marginal lands. In past climate

cycles, these tribes were able to adapt their practices to the environmental conditions.

However, in the 21st century, the presence of international actors, the GOS, globalization,

arms trade, and market forces discourages the use of traditional livelihood practices to

cope with climate variations. "…[I]n future environmental security research will have to

conceptualize its research agenda in awareness of the potential disruptions of climate

change and myriad other ecological factors in an increasingly artificial global

'environment.'"[243] As a result, the climate change factor decreased the feeling of human

security for both the agricultural and pastoralist tribes, creating cleavages. Climate

change will continue to alter the landscape, water availability, and traditional

relationships across Darfur. Unfortunately, climate change will hit the poorest hardest as

it had in Darfur.

E. Cooperation and Conflict Resolution

Attempts for Reform for Climate Change Adaptation
Challenges

Due to the scope and complexity of the conflict in Darfur, finding methods for

peace building will be challenging. On the national level, the limited capacity of the

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[241] Faris, *op cit,* p. 63.
[242] Faris, *op cit*, p. 63.
[243] Dalby, Op Cit: p. 14

environmental governance regimes prevents any real implementation of climate change

adaptation programs. First of all, the several line ministries managing parts of the

environment do not include land tenure issues, one of the major contested resources.

Also, the ministries' jurisdictions often overlap but they fail to communicate with one

another. The Ministry of the Environmental and Physical Development, considered a

service ministry, suffers from underinvestment in the sector.[244] All the ministries suffer

from a lack of good baseline environmental data that is crucial for effective program

management and policymaking. Currently, the government favors big projects such as oil

development, dam building, and large-scale mechanized farming versus sustainable

development.[245] Finally, legislative overlaps and low enforcement capacity weakens the

overall effectiveness of environmental governance. With the sensitive environmental

conditions in Darfur, these challenges pose significant problems for the long-term.

In Darfur, the instability of the region poses significant challenges to

implementing climate change adaptation programs. First of all, a space for peace building

needs to be created. But, the slow deployment and low capacity of the UN hybrid force

only adds to the frustration. Without the feeling of personal security, few incentives will

be provided to stop fighting. Furthermore, the highly fractionalized rebel groups will

have to be unified in order to strengthen their bargaining position with the GOS.

Furthermore, in the next negotiations, other key stakeholder groups must be included,

such as women and traditional leaders.[246] Their fear, lack of trust, low political power,

and incentives for violence maintain the status quo.

Also, humanitarian organizations have the added challenge of remaining neutral

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[244] UNEP (2007), *op cit*, p. 303.
[245] UNEP (2007), *op cit*, p. 301-302.
[246] ICG (2007) N°134, *op cit*, p. 25

to their host government. They must meet the needs of the refugees and IDPs while trying

to improve their overall situation. Their position of neutrality enables them to see events

unfolding first hand, but also limits their political power. As a result, humanitarian camps

can work with the people within the camps to help transform the conflict and promote

environmental awareness.

Finally, the concept of climate change can appear very abstract to people in the

field. They do not have the scientific understanding behind the concept of climate

change. Generally, indigenous knowledge understands the regional changes in climate,

such as decreasing rainfall and desertification. As a result, connecting climate change

adaptation and secure livelihoods projects is paramount for long-term stability for

promoting sustainable development, responsible use of natural resources, mitigation

projects, disaster-risk reduction, and prevent conflict triggers.

2. Successes

While Darfur still suffers from violent conflict and environmental degradation,

other post-conflict areas in Sudan have had successful environmental dialogue. For

example, the Nuba Mountains conflict used international envoys for missions with dual

humanitarian and political purposes, such as the one US Special Envoy Senator John

Danforth headed in 2001.[247] Eventually, a ceasefire agreement (CFA) was as negotiated

in the region through special envoys and a participatory monitoring committee. This CFA

allowed the political space for the Nuba people to hold the "All Nuba Conference."

Essentially a peace meeting, this forum built the capacity for the Nuba people to discuss

land tenure issues, shared natural resources, and the impact of oil on their

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[247] Bradbury et al, p. 68.

communities.[248] If the space for peace can be created, either with peacekeepers or a CFA, then a land tenure conference for the Darfur people, or at least by tribe, can help mend intra and inter-tribal grievances and raise awareness that they share common interests.

3. Possibilities for Peace

Then, in July 2007, researchers at Boston University, headed by Dr. Farouk el-Baz, "discovered" an ancient lake, known as Lake Ptolemy.[249] Researchers, who have since received criticism, heralded the discovery as the answer to Darfur's problems.[250] However, many researchers express pessimism that this lake can provide the mechanism necessary to end the conflict.[251] First of all, the underground lake, about the size of Lake Erie, dried up several thousand years ago.[252] The question of whether or not potable water will actually be found beneath the surface remains to be answered. The location of the lake is in North Darfur in a very remote location. As a result, the transporting the water will be capital and infrastructure intensive.[253] Could this discovery be a possibility for peace? Potentially, the "1,000 wells initiative"[254] could spur partnerships between Boston University, GOS, Egypt, NGOs, and other stakeholders.

F. Recommendations

The following recommendations build upon Mercy Corp's commitment for meeting the needs of refugees and IDPs in their humanitarian camps located in Darfur. They operate as an important contact between the international community and

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[248] Bradbury et al, p. 72
[249] Press Release, Boston University "Space Data Unveils Evidence of Ancient Mega-Lake in Northern Darfur." 11 April 2007.
  Discovery could lead to detection of new groundwater resources.
[250] Butler, Declan. "Darfur Lake is Mirage," *Nature.* Vol. 448, 26 Jul 2007, pp. 394-395.
[251] <http://www.economist.com/displaystory.cfm?story_id=9622006>.
[252] Ibid.
[253] Tearfund (2007) *op cit*, p. 3
[254] "Thousand Wells for Darfur Follows Discovery of Ancient Lake" (23 Jul 2007)

conflicting parties while concurrently maintaining political neutrality. Taking into

account these characteristics of my client, I recommend the following development

strategies for climate change adaptation in their humanitarian programs on a grassroots

level.

INSTITUTIONAL AND POLITICAL REFORMS

1. ***Increase adaptive capacity through improving environmental governance*:** Mercy

   Corps staff can work with local environmental leaders to build their knowledge and

   capacity for understanding climate change flashpoints in Darfur, especially for

   drought management. The lack of drought management was a key issue in the

   conflict, so training local people in water conservation programs will help alleviate

   future problems. People can learn how to measure rainfall, record measurements,

   improve storage techniques, and conduct testing for water quality purposes. Locals

   should learn how to communicate this information to NGOs, local environmental

   officials, as well as their peers. Furthermore, establishing water committees within

   camps can involve local stakeholders in community based management projects

   through participatory techniques. These resource committees could also be

   expanded to other necessities, such as sanitation and food security. In turn,

   committees will strengthen people's commitments to preserving their local

   environment and improve communication between different users.

          In the long-term, a recent report by Tearfund, a fellow humanitarian agency,

   suggests how the humanitarian sector can act as a third party, separate from the

   institutional perspective, in environmental management programs during

conflicts.[255]   For instance, they mention the Post-Conflict Environmental

Assessment Report's recommendation for creating the Integrated Water

Management Team (IWMT) for managing water resources in Sudan.[256] These

programs will help in collecting baseline data for climate change assessments for

the Darfur region. This data will be crucial for local environmental institutions to

track climate changes and make informative decisions for adaptation.

2. *Land Tenure Reforms:* Land tenure reforms will be critical in a post-conflict

setting. Therefore, in the short term, Mercy Corps should find informal channels to

initiate land discussion among camp inhabitants. However, these dialogues must

remain non-threatening to the state and national level institutions. Also, due to the

breadth and destruction of the conflict, the exact traditional *hawakeer* land tenure

systems will not be easily re-introduced due to the changed socio-political setting in

Darfur. These traditional land tenure systems allow for adaptability between the

tribes for different land uses as well as conflict mitigation. Therefore, steps should

be taken to train potential political leaders in successful post-conflict land reforms,

particularly in negotiation skills. Educating and encouraging creative thinking will

empower locals to shape their own land tenure system that could potentially be

institutionalized, thereby becoming legitimate. In addition, the establishment of

land committees within each camp will help communicate IDP and refugees'

perceptions and voices on the issue of land as well as mitigating any disagreements.

In the long-term, Mercy Corps can work with development agencies to create

solutions to the land tenure issues while including local tribal stakeholders in the

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[255] Tearfund (2007) *op cit*, p. 15
[256] Tearfund suggested installing 2 rain gauges in every camp, as well as rain collection barrels to measure rainfall. UNEP (2007) *op cit*, p. 248 & Tearfund (2007) *op cit*, p. 11.

process. These new land tenure systems must have the perceptions of equity,

accessibility, and feasibility. On the local level, land tenure reforms should contain

non-ethnic based *ajaweeds* in the *judiyya* system to provide traditional legal

mechanisms that people will find equitable and accessible. Ideally, the traditional

land tenure can be incorporated into the Native Administration (tribal leadership),

which should be re-established by GOS.

SOCIAL AND ECONOMIC DEVELOPMENT

1. *Strengthen Civil Society***:** Mercy Corps should continue with their community

   development and civil society programs. Additionally, climate change adaptation

   should be added to increase environmental awareness and foster local civil society

   institutions. "Social learning and adaptation include such collective activities as

   discourse, imitation, and conflict resolution."[257] A strong civil society is an

   effective tool against re-occurrence of conflict. Through climate change dialogue,

   Mercy Corps can help Darfurians stimulate networking, encouraging partnerships,

   cross-communication with other camps and villages, increase information flows,

   and improve the social fabric. Camp based projects such as community gardens,

   tree planting, water conservation, and others can help build working relationships

   among camp inhabitants, local villagers, to increase a sense of trust and

   cooperation. Importantly, Mercy Corps can identify and train women and tribal

   leaders for potential environmental leadership roles in the community.

        In the long term, strong social capital will be crucial for adaptation,

   mitigating conflict, and coping with the geographic and socio-political aftermaths of

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[257] Adger (2003), *op cit*, p. 396.

extreme weather events.[258] Importantly, establishing civil society groups and strengthening the social fabric through these bonds can eventually aid in improving national governance. Specifically, in a more secure setting, civil society groups can improve the resource curse situation through government accountability and demand for revenue transparency. They could also network with regional and international NGOs to increase their resources.

2. ***Integrate climate change adaptation into livelihood programs***: For long-term planning, climate changes pose a significant problem for subsistence livelihoods. In the short-term, Mercy Corps should implement programs that train sustainable livelihoods that are appropriate for the regional climate and that minimize environmental impacts. Also, incorporating climate change adaptation strategies into livelihood trainings will increase awareness, improve environmental education, and incorporate indigenous knowledge in daily adaptation strategies.

    In the long-term, strengthened livelihoods training will provide alternative employment opportunities for camp inhabitants, thereby decreasing poverty and increasing employment choices. In turn, since the poorest populations are most severely affected by climate change, alternative livelihoods will enable people to earn a better living meanwhile improving their adaptation capacity.[259]

3. ***Network with Environmental NGOs, Universities, and Humanitarian Organizations***: As mentioned earlier, encouraging networking between the locals is

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[258] Ibid, p. 295

[259] IUCN ; International Institute for Sustainable Development ; Stockholm Environment Institute ; Swiss Development Cooperation ; Intercooperation ; Task Force on Climate Change, V. C. a. A. (2003). Livelihoods and Climate Change: Combining disaster risk reduction, natural resource management and climate change adaptation in a new approach to the reduction of vulnerability and poverty Winnipeg, Manitoba CANADA, International Institute for Sustainable Development *Op cit, p. 4*

crucial for successful climate change adaptation and improving the social fabric.

Also, non-governmental institutions can be used for Track II and Track III

Diplomacy that will encourage stakeholders to participate without government

interference. In addition, this approach invites NGO leaders, academics,

environmentalists, and others to share knowledge and increase capacity of

institutions for climate change. Since many of these organizations have limited

funds, personnel, and limited capacity, Furthermore, organizing conferences can be

an excellent opportunity for incorporating climate change into the wider Darfur

conflict dialogue, especially for peace building programs.

EDUCATION AND COMMUNICATION

1. ***Incorporate Climate Change into Peace Education:*** Introducing climate change

   education will help increase awareness of adults, but also expose children to the

   issue of global warming. As climate change becomes more significant in the region,

   people must be aware of the causes and learn practical solutions for adaptation.

   Education on water conservation, local ecology, improved agricultural practices,

   reforestation, recognizing weather patterns, and sustainable animal management

   will be necessary tools for preserving livelihoods and maintaining peace. Climate

   change knowledge will help mitigate tensions by recognizing the environmental

   flash points, increase capacity building of local environmental governance, and

   provide tools for livelihood adaptation. In addition, peace education should be

   added to the basic curriculum in camps. The combination of the two types of

   education will help people understand the possibility of peace, learn negotiation

   skills, and encourage use of local conflict resolution mechanisms. Empowering

citizens with these skills will enable them to maintain the peace and their preserve their local environments from degradation over the long-term.

IV. CONCLUSION

Lessons learned from Darfur

In conclusion, the crisis in Darfur presents a tough challenge for peace initiatives due to the complexity of the conflict and the sensitivity of the environment. The fluid socio-political identities does not allow for a one-size fits all approach. A wide breadth of stakeholders must be involved in order to improve dialogue and incorporate multiple interests in the peace building process. Further negotiations should include a wider breadth of stakeholders that will include additional rebel groups, Arab tribes participating in militias, non-violent tribes who have traditional rights, civilians, refugees, and IDPs in the next round of negotiations.

Additionally, the environmental aspects of the conflict should not be pushed aside for political initiatives. The DPA failed to address the environmental root causes of the current conflict: land tenure, drought management, and water access. The environment plays a central role on the local and national scales. Any peace building solutions must incorporate environmental components into policymaking toolboxes. Traditionally, environmental measures are not considered in traditional peacemaking initiatives. However, with the onslaught of climate change, environmental aspects in conflicts will gain more importance for resolving violent situations. In addition, adaptation strategies to climate change and peace-building initiatives are not mutually exclusive. They can be incorporated into one another due to the fact that they have similar goals: poverty alleviation, improves adaptability of communities, and manages the environment

effectively. Finally, Darfur highlights key environmental early warning signs for conflict, such as the breakdown of traditional relationships over natural resources, and scorch-and-burn tactics by dissenters. Isolating these important environmental factors can help conflict mitigation programs quickly identify and neutralize triggers.

Future Research

Conflict management and mitigation programs should consider the impacts of climate change in their assessments. Also, future programs should use scientific climate change models and socio-economic and political information to predict high conflict risk areas. These methods can help prevent conflicts, as well as improving communities' ability for adaptation in a changing climate. Furthermore, more emphasis needs to be placed on the importance of the environment throughout the conflict cycle. Most importantly, the environment is a common good that can build bridges between warring parties in the peace building process. Climate change will alter social, political, and economic dynamics, and the conflict management community must be prepared.

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United States. Department of Energy. "Energy Information Administration: Sudan"
        <http://www.eia.doe.gov/emeu/cabs/Sudan/Background.html>
World Bank: Sudan
        <www.worldbank.org/sudan>

VI. Appendices

A. Maps
Political

Source: US Dept. of State
<http://www.state.gov/cms_images/sudan_map.jpg>

Ecological Zones

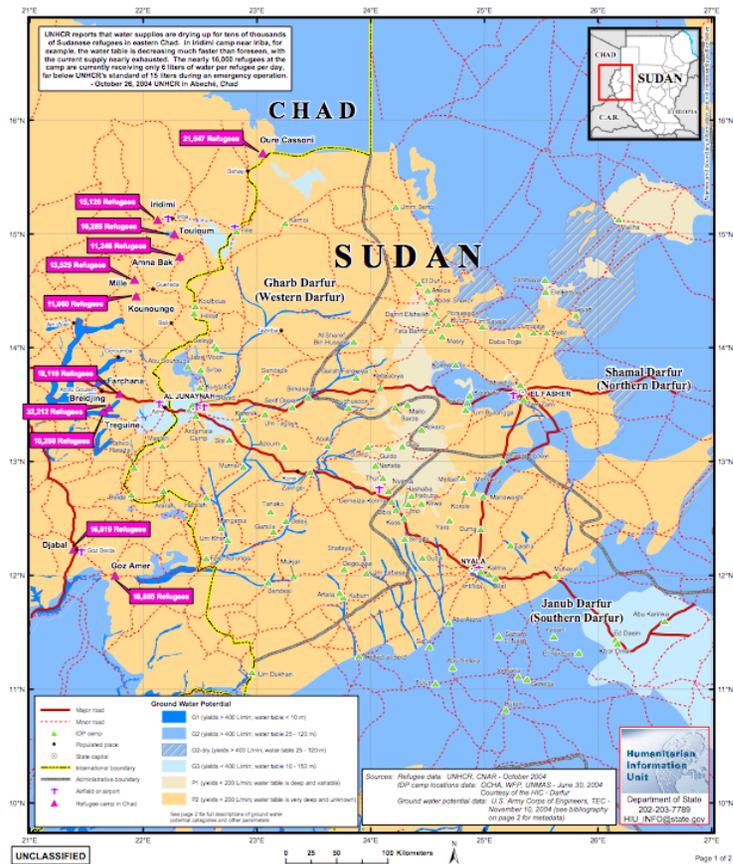**Source: UNEP Sudan: Post Conflict Environmental Assessment**
<http://ocha-gwapps1.unog.ch/rw/rwb.nsf/db900sid/LPAA-74THWS?OpenDocument>

Water Resources

Date: November 18, 2004
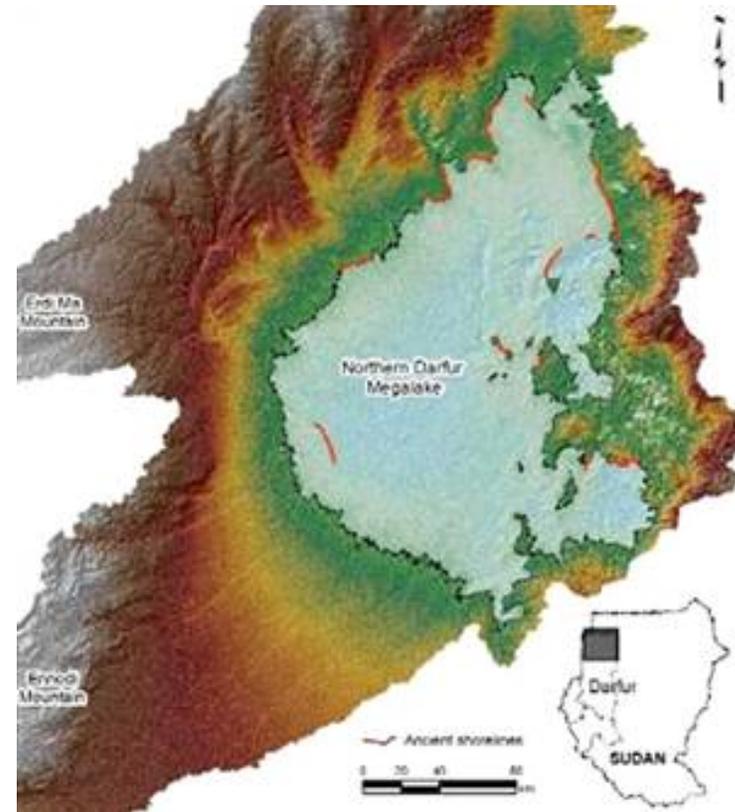
Sudan (Darfur) - Chad Border Region
Ground Water Potential

UNCLASSIFIED

Source: UNEP
<http://postconflict.unep.ch/sudanreport/sudan_website/doccatcher/data/Ph
otographs%20Figures%20and%20Captions%20by%20Chapter/Remote%20
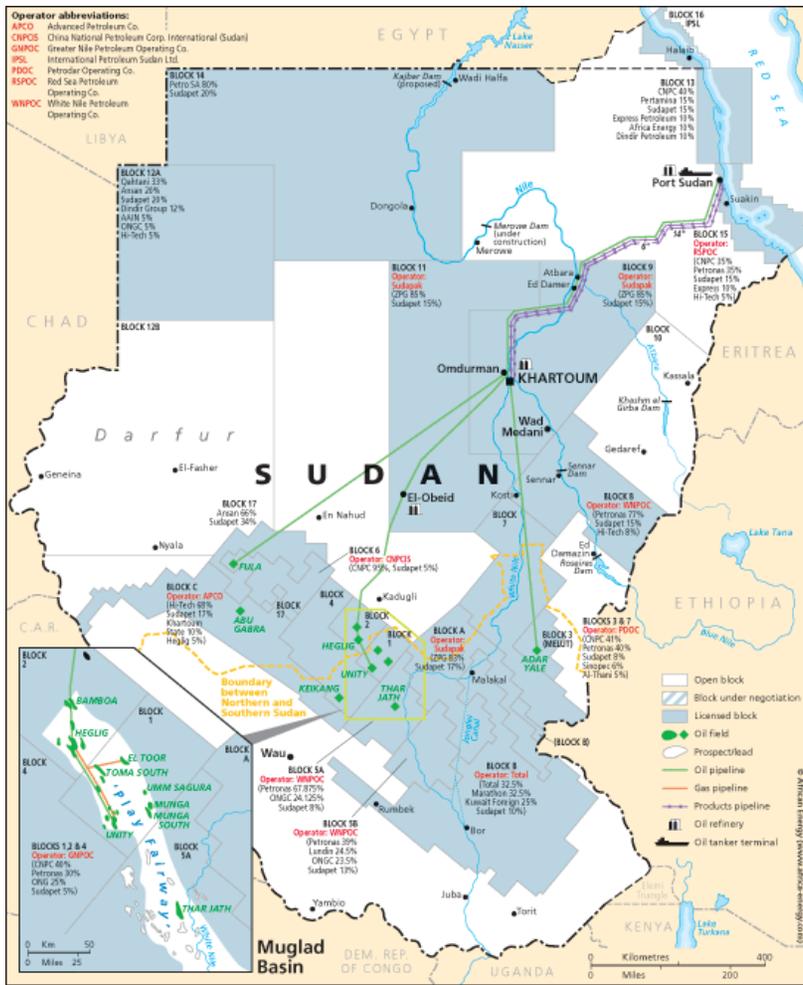Sensing%20and%20Maps/Miscellaneous%20Maps/Darfur%20Groundwate
r.pdf>

Lake Ptolemy
Discovered by Dr. Farouk al-Baz of Boston University's
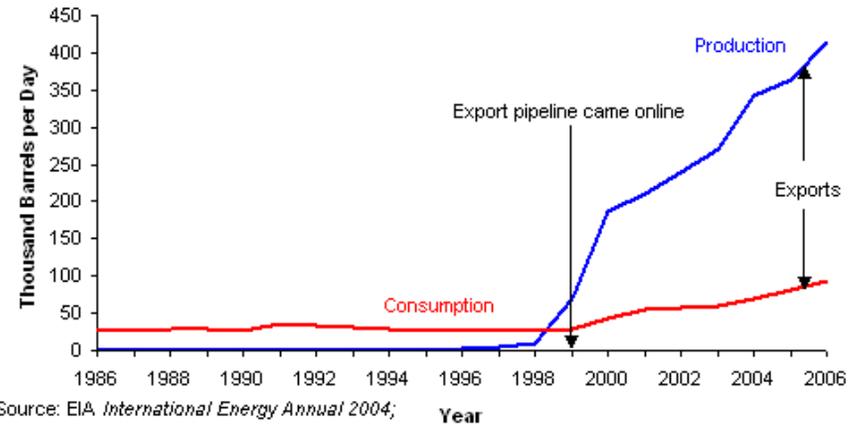Center for Remote Sensing

Source: MSNBC <http://www.msnbc.msn.com/id/18059416/>

Oil Concessions

Source: Africa Energy < http://www.africa-energy.com/map_library/east/sudan/sudan_industry_and_infrastructure_developments.html>

Source: Energy Information Administration
<http://www.eia.doe.gov/emeu/cabs/Sudan/Full.html>

Deforestation

Source: UNEP Post Conflict Environmental Assessment: Sudan
<http://postconflict.unep.ch/sudanreport/sudan_website/doccatcher/data/Ph
otographs%20Figures%20and%20Captions%20by%20Chapter/Remote%20
Sensing%20and%20Maps/final%20PCEA%20report%20maps/Jebel%20M
arra%20deforestation.pdf>

B. Environment legislation

1. Environmental Framework Act of 2001[260]

2. Land related legislation[261]
  ➢ Titles of Land Ordinance, 1899
  ➢ Land Settlement Ordinance, 1905
  ➢ Native Dispositions of Land Restrictions Ordinance, 1918, 1922
  ➢ Land Resettlement and Registration Act, 1925
  ➢ Land Acquisition Act, 1930
  ➢ Pre-Emption Act, 1938
  ➢ Unregistered Land Act, 1970
  ➢ Local Government Act, 1971
  ➢ Petroleum Resources Act, 1972
  ➢ Civil Transaction Act, 1984 and its Amendment, 1990
  ➢ Encouragement of Investment Act, 1981, 1991, 1998
  ➢ Forest Act, 1989
  ➢ Construction Planning and Land Disposition Act, 1994
  ➢ Local Government Act, 1998

3. Oil Resources Legislation[262]
  ➢ Petroleum Act, 1972 amended in 1975
  ➢ Petroleum Resources Regulations, 1973
  ➢ Encouragement of Investment Act, 1980
  ➢ Encouragement of Investment Act, 1996

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[260] UNEP (2007), *op cit*, p. 297
[261] Nucci, Domenico. "Study on arbitration, mediation and conciliation of land and property disputes,"
Land and Property Study in Sudan. Nairobi, November 2004.
[262] Abusharaf, *op cit*, p. 31

C. Conflict Tools

1. Hierarchy Analysis

Possible Causes	Plausible Causes	Actionable Causes
❖ Environmental Degradation ❖ Climate Change ❖ Lack of Property rights ❖ Disintegration of traditional relations	❖ Migration of pastoralists ❖ Government failure ❖ Weak environmental governance ❖ Breakdown of *hawakeer* system	❖ Land laws need to be reformed and decentralized ❖ Re-establish local government & citizen capacity ❖ Restructure and improve governance ❖ Increase adaptive capacity ❖ Economic development & livelihood diversification

2. Stakeholder's Analysis

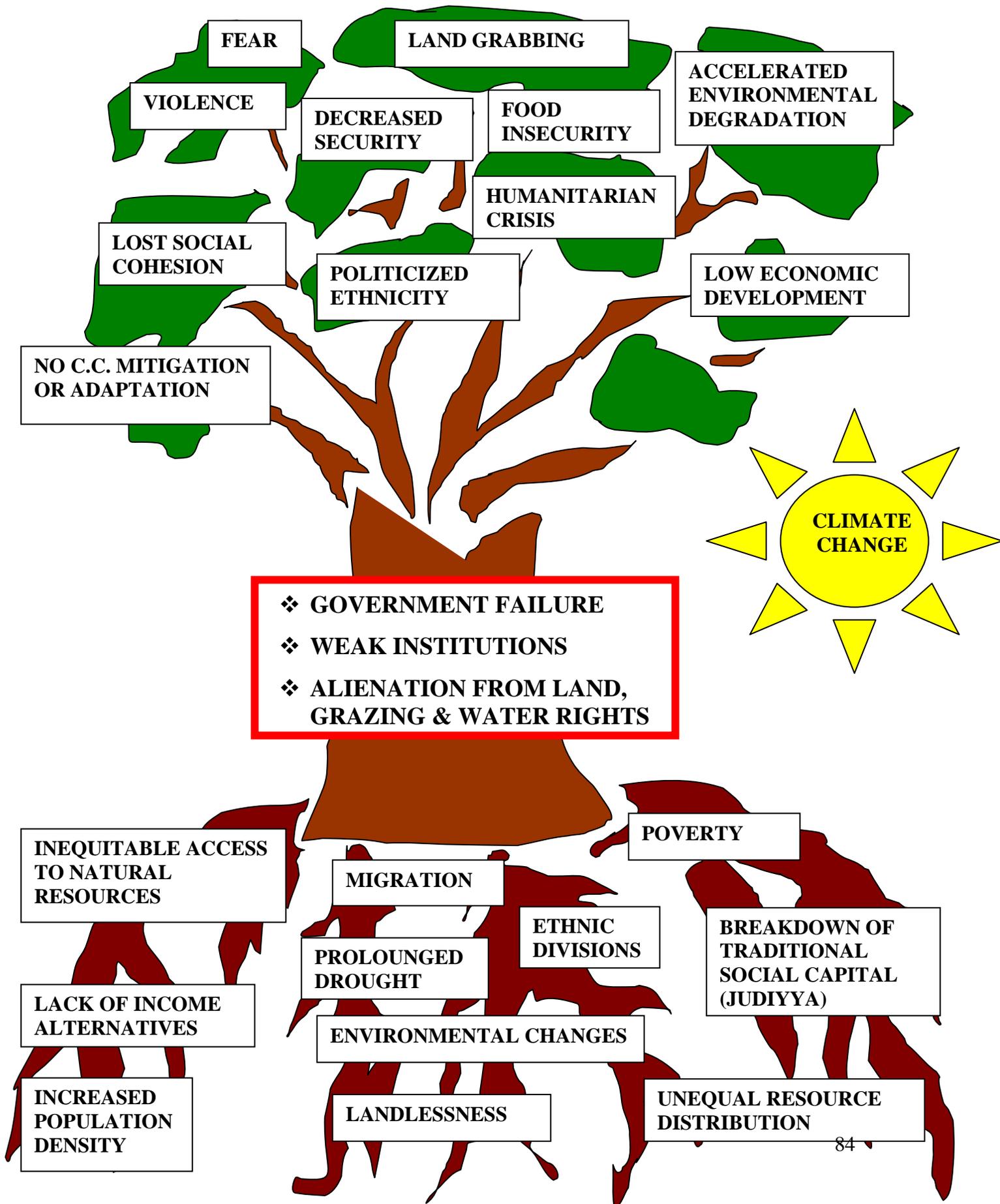| PRIMARY STAKEHOLDERS				
Party	**Interests**	**Resources**	**Perception**	**Position**
GOS	➤ Uphold centralized power ➤ Oil interests in Darfur ➤ Control land rights ➤ Maintain sovereignty ➤ Receiving International aid	➤ Military, economic, and political power ➤ Centralized control over natural resources ➤ International networks to support power	➤ Tribal conflict that cannot be managed locally, need central power force ➤ Darfur peace threat to NCP political power ➤ Security Council resolution #1706 threat to national sovereignty	-5
SLA/MM & AW	➤ Power sharing between blacks and Arabs ➤ Protecting Land Rights ➤ End to marginalization ➤ Development ➤ Maintaining military strength in region ➤ MM: Uphold DPA ➤ AW: Undermine GOS & DPA	➤ Military power in Darfur ➤ Need their cooperation for any peace agreements and land policy reform ➤ Control over rebels	➤ NCP marginalized them ➤ Political Grievances	+1/-1
JEM	➤ Realignment of GOS political structures ➤ Regional autonomy ➤ Become more politically powerful ➤ Maintain relationship with Chad ➤ Protecting Land Rights	➤ Military power in Darfur ➤ Connections to Chad ➤	➤ Loyal to NCP ➤ Islamist ➤ Imbalance of power & wealth	-3

PRIMARY STAKEHOLDERS				
Party	**Interests**	**Resources**	**Perception**	**Position**
NRF	➢ Maintain coalition ➢ Gain military and political strength	➢ Military power	➢ Political and economic marginalization	+2
Arab Militias	➢ Capture lands from black Africans to receive property titles from NCP ➢ Protecting way of life ➢ Maintaining power in Darfur	➢ Military power ➢ Relationship with GOS	➢ Non-African tribes control land, water, denied access ➢ Violence against them	-1
Refugees/ IDPs/ Civilians	➢ Human Security ➢ Access to drinking water, shelter and food ➢ Want to return to their lands ➢ Compensation for atrocities ➢ Political and economic participation	➢ Connections with Humanitarian organizations & NGOs ➢ Traditional environmental knowledge ➢ Judiyya	➢ Caught in the cross-fire ➢ Deliberately targeted ➢ GOS have no reason for violence	+5

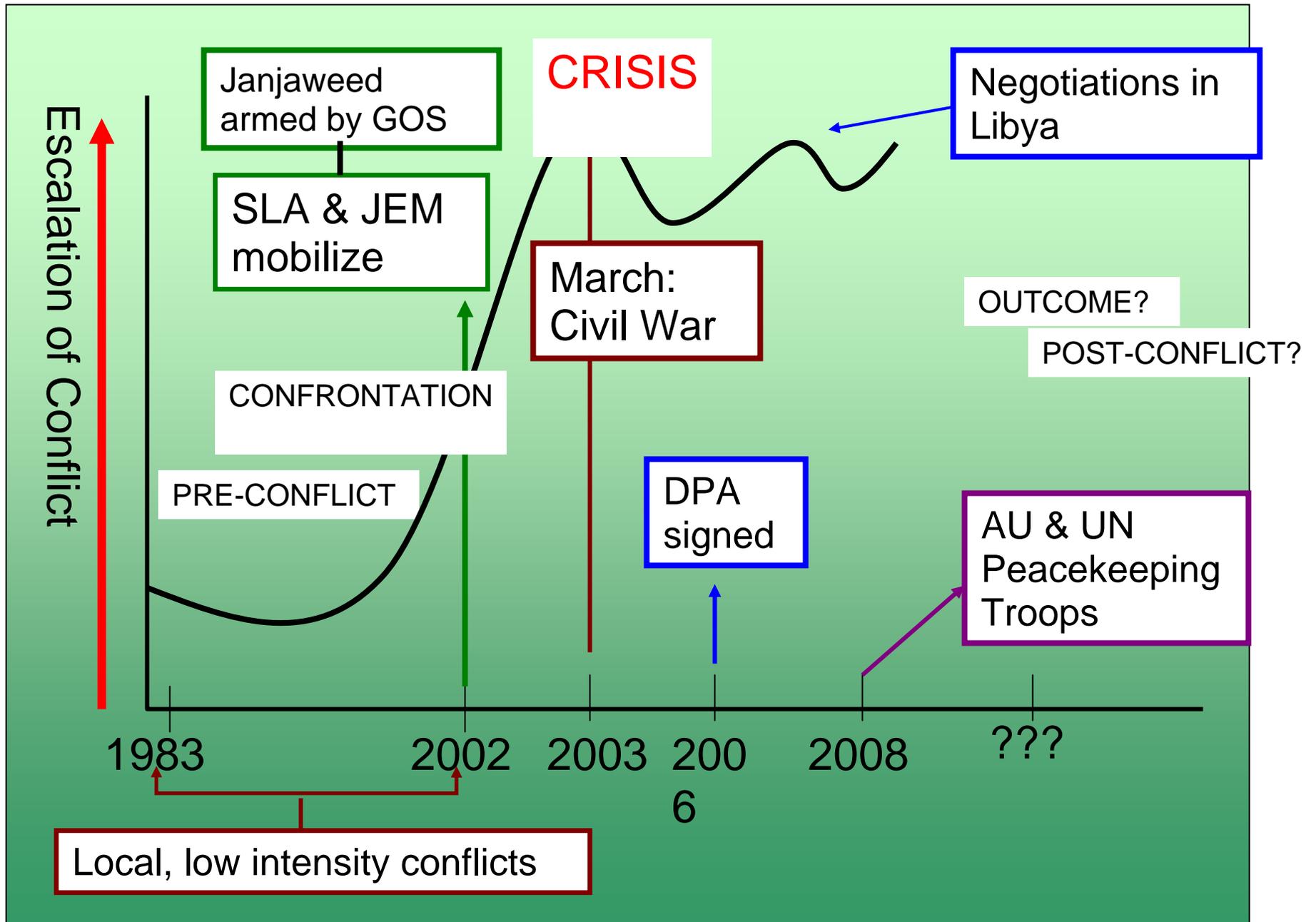| SECONDARY STAKEHOLDERS			
Party	**Interests**	**Resources**	**Position**
Political Opposition Parties	➢ Concern over future relevance ➢ Oust NCP from political power ➢ Re-open peace talks	➢ Money and political power ➢ Potential ally	0
SPLM/A	➢ Implement CPA accords ➢ Oil revenue sharing ➢ John Garang-Leader ➢ Could pressure Darfur rebel groups to negotiate	➢ Political influence under CPA ➢ Military and political power with Khartoum ➢ Connection with key groups in Darfur	+4
China	➢ Control oil resources ➢ Energy security ➢ Infrastructure projects ➢ International credibility	➢ Economic, political, and military power ➢ International standing ➢ Development aid	-5
Arab tribes	➢ Access and rights to land and pasture ➢ Control fractionalization ➢ Political power ➢ Survival of way of life	➢ Influence with rebel groups	+3

EXTERNAL STAKEHOLDERS			
Party	**Interests**	**Resources**	**Position on Issue**
USA	➤ International Aid to NGOs ➤ Oil resources ➤ Economic sanctions against GOS ➤ Interested in GOS as information source for "war on terror" ➤ Uniting the SLA and rebel factions ➤ Trade embargo since 1997 ➤ Democratization of Africa	➤ USAID ➤ NGOs ➤ Military, economic, and political aid ➤ Technical, monetary and development assistance	+5
UN	➤ Joint effort with WB to identify urgent and long-term development needs ➤ Human rights ➤ Resolve Darfur Conflict	➤ Humanitarian programs ➤ Environment programs ➤ Peacekeeping forces ➤ Political power	+5
World Bank	➤ Joint effort with UN to identify urgent and long-term development needs ➤ Agricultural and land reform ➤ Reducing external debt ➤ Combating corruption	➤ Development aid ➤ Relationships with USA, UN ➤ Technical expertise	+5
AU	➤ Regional Stability ➤ Act as Mediator ➤ Credibility of institution in region ➤ Resolve conflict	➤ Peacekeeping forces ➤ Collaboration with UN ➤ Seen favorably by Khartoum	+2
Chad	➤ Continue proxy war with GOS through JEM ➤ Protect interests of Zaghawa tribe ➤ Refugees	➤ Military aid to Zaghawa rebel groups ➤ Military power	-4
Egypt	➤ Concerned with Nile water implications and dam building by GOS ➤ Southern Sudan referendum ➤ Regional Stability	➤ Military and economic aid	+1

EXTERNAL STAKEHOLDERS			
CAR	- Refugees - Regional Stability	- Military aid - Assistance to refugees	+1
Libya	- Successful peace talks - Regional Stability - Supporting rebels, GOS, and Chad with aid and military weapons	- Negotiating power with GOS - Military, economic, and political aid	+1
Eritrea	- Helped aid Sudanese rebel groups (JEM) - Oil interests in Sudan - Draw GOS from Ethiopian alliance	Military aid to rebels	-1
Donor Countries	- UK, France, Switzerland, Norway, Netherlands - Out of all these groups, Switzerland has the most sway due to their investment in oil resources - Stopping human rights abuses	- Technical resources - Monetary aid - NGOs - Humanitarian assistance - Military for peacekeeping force	+5
MNCs	- Clivenden (Swiss) 37% of ABCO - Want to maintain good relationship with GOS - Win oil concessions - Satisfy stakeholders, make profits	- Economic power - Technical expertise	-4
Japan	- Trade relations with GOS - Comply with other donor nations, such as USA	- Development aid - Economic relations	0
NGOs	- Humanitarian aid to refugees - Protection of water resources - Security and peace efforts	- Humanitarian assistance - Connections with major donor countries and concerned citizens - Information networks - Monitoring of land tenure system - Build local capacity	+5
Arab League	- Political, religious ideology - Pan-Arabism - Lack criticism of GOS	- Political connections - Financial assistance - Good influence w/ GOS	-1

3. Conflict Tree

FEAR

LAND GRABBING

ACCELERATED ENVIRONMENTAL DEGRADATION

VIOLENCE

DECREASED SECURITY

FOOD INSECURITY

HUMANITARIAN CRISIS

LOST SOCIAL COHESION

POLITICIZED ETHNICITY

LOW ECONOMIC DEVELOPMENT

NO C.C. MITIGATION OR ADAPTATION

CLIMATE CHANGE

❖ **GOVERNMENT FAILURE**

❖ **WEAK INSTITUTIONS**

❖ **ALIENATION FROM LAND, GRAZING & WATER RIGHTS**

POVERTY

INEQUITABLE ACCESS TO NATURAL RESOURCES

MIGRATION

ETHNIC DIVISIONS

BREAKDOWN OF TRADITIONAL SOCIAL CAPITAL (JUDIYYA)

LACK OF INCOME ALTERNATIVES

PROLOUNGED DROUGHT

ENVIRONMENTAL CHANGES

INCREASED POPULATION DENSITY

LANDLESSNESS

UNEQUAL RESOURCE DISTRIBUTION

84

4. Stages of Conflict

Escalation of Conflict

Janjaweed armed by GOS

SLA & JEM mobilize

CRISIS

Negotiations in Libya

March: Civil War

CONFRONTATION

OUTCOME?

POST-CONFLICT?

PRE-CONFLICT

DPA signed

AU & UN Peacekeeping Troops

1983   2002   2003   2006   2008   ???

Local, low intensity conflicts

Croshaw

25 Apr 2008

Access Point

Peacekeepers UNAMIS

IDPs Refugees

NGOs

USA
UN
B&M donors
Corporations
Neighbors

Rebels

GOSS

JPN

Egypt

India

Conflict

GOS

Oil MNCs

Malaysia

Janjaweed

Arab League

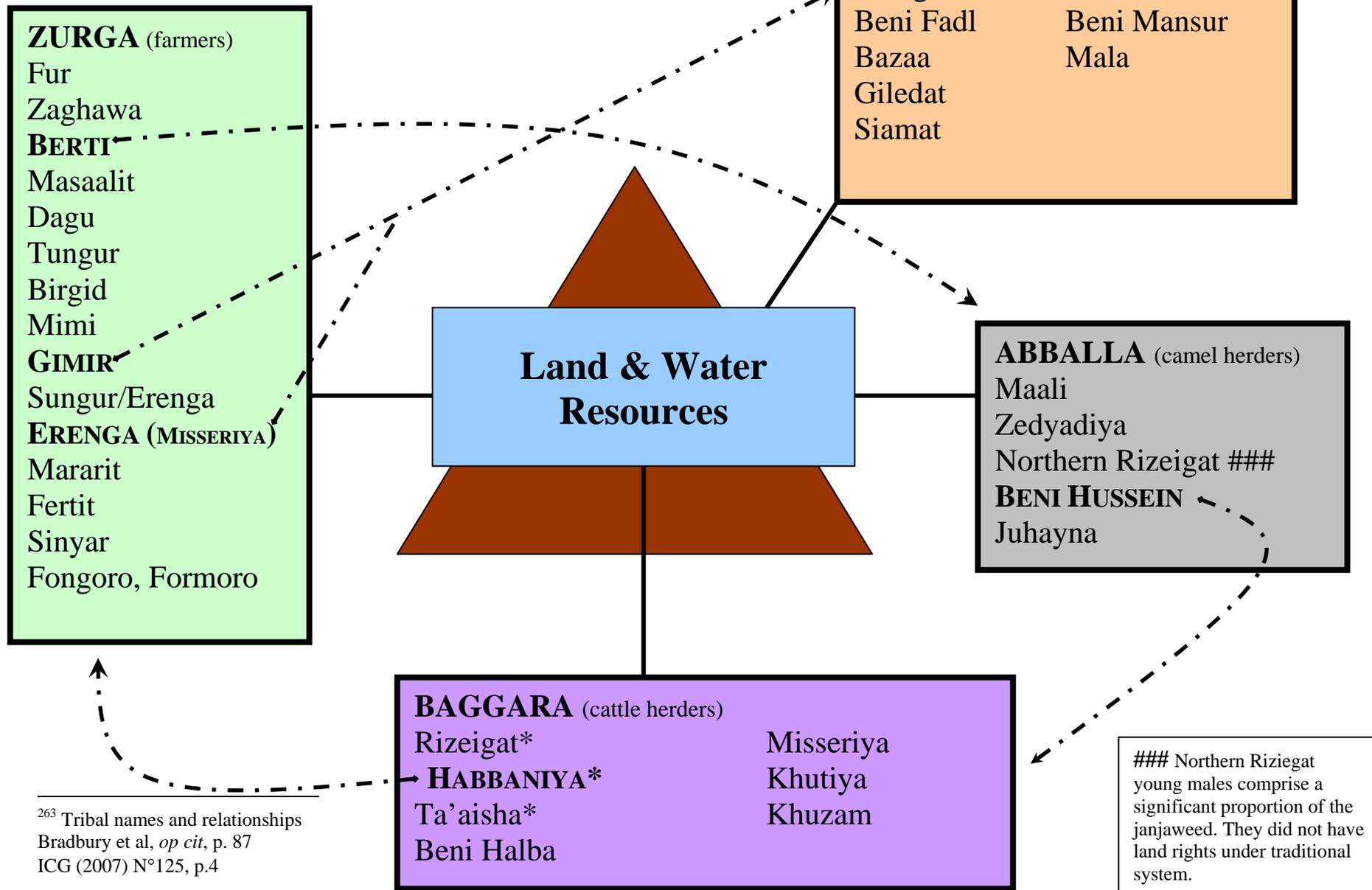Arab Tribes

Chad

China

86

5. Local Actors & Relationship to Environment & Livelihood[263]
Legend: Dashed lines (— · — · — · —) next to ethnic group demonstrates fluid relationship with other livelihoods in Darfur region
* Denotes tribe refrained from conflict.

ZURGA (farmers)
Fur
Zaghawa
BERTI
Masaalit
Dagu
Tungur
Birgid
Mimi
GIMIR
Sungur/Erenga
ERENGA (MISSERIYA)
Mararit
Fertit
Sinyar
Fongoro, Formoro

AGRARIAN ARAB

Erenga	Hamra
Beni Fadl	Beni Mansur
Bazaa	Mala
Giledat	
Siamat	

Land & Water Resources

ABBALLA (camel herders)
Maali
Zedyadiya
Northern Rizeigat ###
BENI HUSSEIN
Juhayna

BAGGARA (cattle herders)

Rizeigat*	Misseriya
HABBANIYA*	Khutiya
Ta'aisha*	Khuzam
Beni Halba	

[263] Tribal names and relationships
Bradbury et al, *op cit*, p. 87
ICG (2007) N°125, p.4

Northern Riziegat young males comprise a significant proportion of the janjaweed. They did not have land rights under traditional system.

The Onion

Janjaweed
-**Position**: Rebel groups violated contract w/ GoS
-**Interests**: political power, access to resources, land
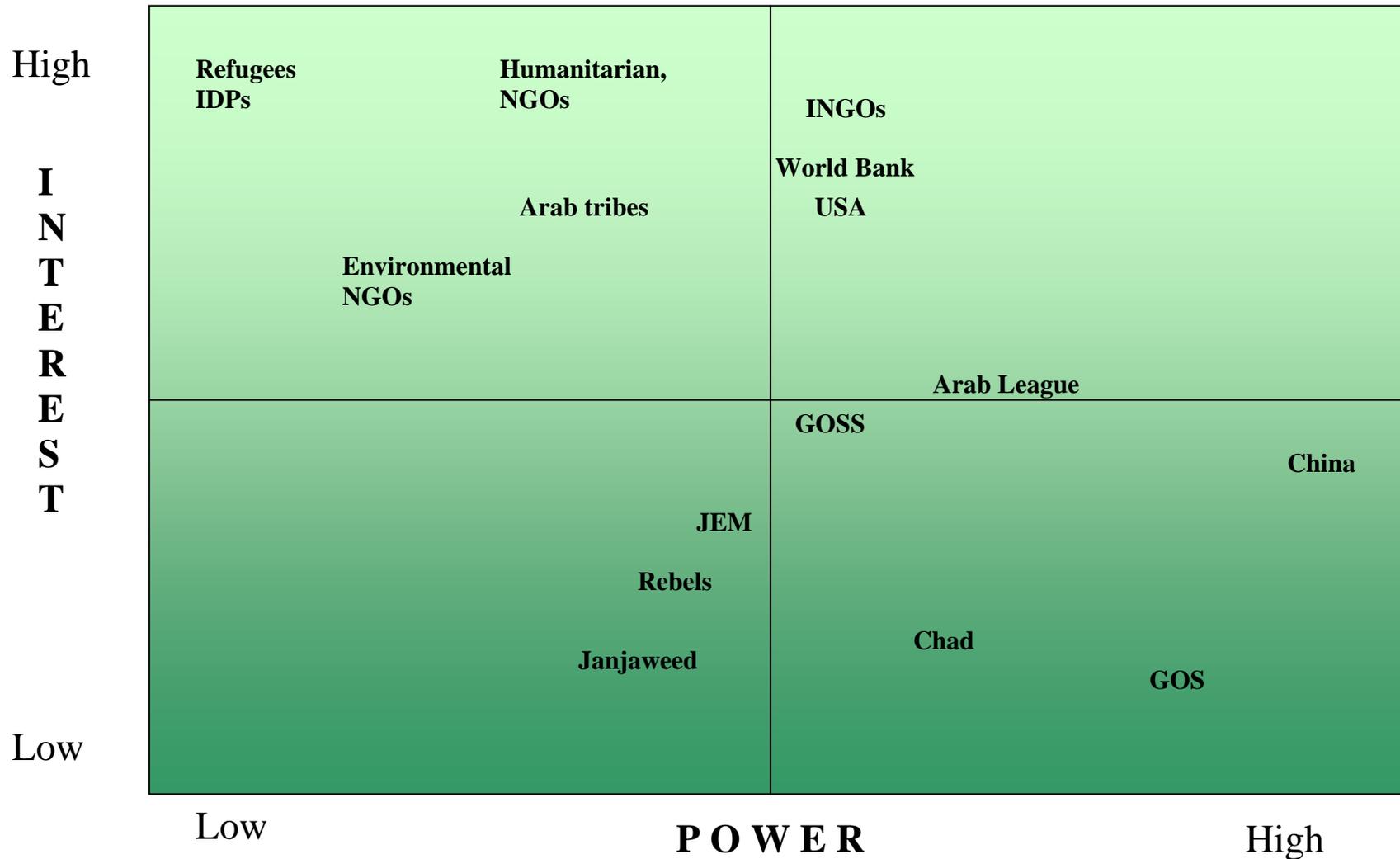- **Needs**: Land, human security, sustainable livelihood

Rebels
-**Position**: political & economic grievances, differing visions
-**Interests**: political and economic power sharing, access to natural resources
-**Needs**: Human security, land, housing, sustainable livelihoods

Position

Interests

Needs

IDPs, Refugees, Civilians
-**Position**: militias and GoS want to commit genocide
-**Interests**: peace, security, voice, relationship w Arabs
-**Needs**: access to natural resources, land, sustainable livelihoods, food, water

Arab tribes
-**Position**: conflict btw Rebels and GoS
-**Interests**: access to NR, land, security, traditional relationship w/ Africans
-**Needs**: food, water, livelihood security, shelter

88

7. SWOT Analysis

SWOT Analysis – Mercy Corps	
STRENGTHS • Committed personnel to making change • Dynamic research team • Favorable political climate for climate change programs and research • Current knowledge of refugees 's interests, needs, and positions in humanitarian camps • Trust from local community • Go between for locals, government, and international actors • Can operate outside of governments and institutions	**WEAKNESSES** • Limitation set by host government • Research parameters set by aid agencies • Limited capacity to influence political change in weak states • Funding • Political influence low • Become political tool • Cannot jeopardize national sovereignty in host countries
OPPORTUNITIES • Incorporate climate mitigation and adaptation strategies into humanitarian work • Increased funding opportunities by multilateral agencies • Collaboration with other humanitarian and environmental organizations • Eligible for civil society targeted grants in LICUS from donors (WB) • Neutrality status for mediating between different levels of actors	**THREATS** • Hostility from host government for humanitarian initiatives • Competition from other organizations for money on climate change research • Lose trust of local populations trying to serve • Lack of time to prepare for humanitarian crises • Exacerbate conflict from perceived inequities • Personnel insecurity

8. Power and Interest Grid of Stakeholders

High

I
N
T
E
R
E
S
T

Low

Refugees
IDPs

Humanitarian,
NGOs

INGOs

World Bank

Arab tribes

USA

Environmental
NGOs

Arab League

GOSS

China

JEM

Rebels

Chad

Janjaweed

GOS

Low   **P O W E R**   High

Implementation Phase

OBJECTIVES	SHORT-TERM STRATEGY	LONG-TERM STRATEGY	EXPECTED RESULTS
Reform land tenure system	Interview IDPs and Refugees to locate land on maps, inquire into traditional land tenure practices	Resettle people on lands, improve land market to increase participation of landless peoples, increase transparency and accountability	Increased transparency and fair juridical system, clear and efficient laws and regulations
Peace, Environmental, and Health Education	Teach skills on negotiations, incentives for reducing environmental impacts, increase health education for quality of life, reading, writing, and arithmetic programs	Capacity building of local populations to increase their skills, understand links between climate change and personal behavior, and quality of life	Sustainable peace, increase knowledge of climate change, and limited clashes over land
Sustainable livelihoods	Prevent environmental degradation that would lead to land scarcity, planting tree initiatives, reducing livestock	Post-conflict, establish projects focusing on diversifying incomes, sustainable development	Increased incomes, reduced environmental impacts
Reducing environmental impact of humanitarian camps	Decrease activities that are water intensive, voucher system for water, solar energy for cooking, electricity for housing, sanitation	If camps are long term, create sustainable systems of food, fuel, and finances for efficiency and equity	Improved environmental, social, and economic conditions
Track Two Diplomacy	Use networks to initiate track two diplomacy for Darfur, humanitarian & environmental experts	Groups to pressure Khartoum to seriously resolve conflict through inclusive negotiations before 2009	Engage epistemic community to influence environmental policy in peacebuilding and climate change adaptation strategies
Adaptive Capacity: Strengthen local institutions for climate change mitigation and adaptation	Increase local capacity Negotiations training to see beyond zero-sum game	Reduce environmental degradation, poverty, and conflict	More effective local negotiations to express needs, sustainable peace agreement