Ulf Johansson Dahre (ed.)

Horn of Africa and Peace: The Role of the Environment

A Report of the 8th Annual Conference
on the Horn of Africa
Lund, Sweden, August 7-9, 2009

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AND
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Table of Contents

Acknowledgements

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Special thanks to Count Pietersen, former Ambassador to UN, who efficiently and professionally has been chairing the Horn of Africa conferences since 2002. We also deeply thank Mrs Fatima Jibrell, Engineer Ishael Siroiney who co-chaired the conference, as well as those who reported from the conference workshops.

Finally, we thank everybody who participated in the conference and thus contributed to our efforts to promote peace, democracy, rule of law, respect for human rights, protection of the environment and development in the Horn of Africa.

Abdillahi Jama,

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Opening Statements

Introduction Statement for the Opening of 8th Horn of Africa Conference in Lund

Abdillahi Jama, SIRC, Conference Coordinator

Distinguished Guests, Ladies and Gentlemen,

The 8th annual Lund Horn of Africa Conference focus on the role of the environment. The purpose of the conference is to enhance the capacity of stakeholders in the Horn of Africa with new ideas and tools to enable them to act progressively and effectively in favour of peace-building, democracy, good governance, rule of law and development and long-term institutional change in the Horn of Africa responding to its social needs. The primary objectives of the conference are to:

- Address elements encompassed within environmental peace-making and peace-building processes,
- Encourage and facilitate dialogue between stakeholders to stimulate community-driven solutions to environmental issues integrated with long-term development plans.
- Enable networking among stakeholders in the civil society and political leaders on environmental peace-making and peace-building issues.

First of all, on half of the organizers of the Horn of Africa conference, I would like to thank all guest speakers and moderators of the conference for accepting our invitation. I also warmly welcome all participants of the conference.

The organizers deeply thank the City of Lund, Folke Bernadotte Academy, Forum Syd/Sida, Lund University, ABF Lundabygden, Folkuniversitetet Lund, FN Association in Lund, and Lunds Arbetarekommun, for supporting the conference. Without this assistance, it would not have been possible to organize our successful conferences for the Horn of Africa in Lund, Sweden.

We are here today at this 8th Horn of Africa conference in Lund, because we believe there is a great need to meet and discuss crucial issues on peace and environment in the Horn of Africa.

Thus, we hope that the exchange of ideas, discussions, gained trust and confidence among participants, will enable you all to influence the development in the region in the most constructive way.

The conference is chaired by Ambassador Count Pietersen, and Co-chaired by Ms Fatima Jibrell, Horn of Africa Relief Chairman and Engineer Ishael Siroiney.

For your information, the proceedings of the 2002, 2003 2004 and 2008 conferences are available for sale in book form. There are also a great number of books on the environment published by the Swedish International Development Cooperation (Sida) that are available free of charge.

Thank you!

Welcoming and Opening statement

Tranje Danielsson, Vice Mayor, City of Lund

Ladies & Gentlemen,
On behalf of the people of the City of Lund, I would like to extend our warmest welcome to all of you, representatives from the world of academia, from government authorities, from the United Nations, from the European Union, from Non-Governmental Organisations and religious bodies, to this, the eighth Horn of Africa Conference in Lund.

As I stood in front of this assembly last year, I spoke about my personal views on the history and future of the Horn of Africa. And my views were on a bright note. So bright, I even acknowledged the possibility of people perhaps thinking I was naïve.

And the situation that has developed on the Horn of Africa during the last year, and which we all have followed in the media, is cause for pessimists to say "*I told you so*".

But I am a stubborn man! I absolutely refuse to give in to the forces of pessimism and cynicism. I maintain that the Horn of Africa is not only the disaster zone we see in news programmes on TV. For me, the Horn of Africa remains a vast reserve of yet unfulfilled potentials – a bright future in the making.

But potentials are not automatically realized by themselves. They must be *allowed* to be realized. And this is, I believe, at the core of many of the challenges facing the Horn of Africa. As you all know, the Horn of Africa was already 1500 years ago a cosmopolitan crossroads for people, culture, business and ideas that was on par with the ancient Greek, Egyptian, Indian and Roman civilizations.

But then came the European scramble for Africa, the colonial wars and the oppression and exploitation that it brought with it. And the sins of the European colonialists then are with us still today.

Now, mind you, I'm not saying that the Horn of Africa owes its poverty and problems today *completely* to the wrongdoings of the west. That would be to oversimplify the problem.

However, I think it is fair to say that the west owes much of its fortunate situation to the unjust exploitation of the third world – the Horn of Africa included. This makes the west in a way morally indebted to the Horn of Africa.

This background is important to keep in mind when we see the challenges from, for instance, pirates off the coast of Somalia today.

A Chinese proverb says:

> Give a man a fish, and he will have food for a day. Teach him to fish, and he will have food for a lifetime.

Thoughtful words indeed.

What has happened in the Horn of Africa lately is that fishing ships from among others the European Union are vacuuming the waters of Somalia from fish, effectively tearing food from the plates of the people of Somalia. According to the *Food and Agriculture Organization of the United Nations*, fish worth 450 million US dollars are plundered from the seas outside Somalia every year, and the profits are pocketed by western fishing organizations.

Piracy is one of the many unfortunate effects of this development.

Now, many EU-nations, including Sweden, are sending warships to protect the international trading vessels in the area. Hopefully, they will succeed in their task to stop the pirates' criminal activities.

But after that, it would be appropriate and efficient for the EU to use the same political and military determination to stop the menace of the EU fishing vessels, and leave the resources of the sea to the people of the Horn of Africa. The Swedish trade minister Ewa Björling is also pushing for reform of the EU fishing policies. The most efficient and enduring measure to counter piracy and to promote peace is to give power to local communities along the shores of the Horn of Africa to build their own futures!

And for all the complex issues and challenges facing the Horn of Africa the following is true: *Knowledge is the way to a brighter future*!

This insight is central to all the major world religions. The prophet Mohammed said:

> Acquire knowledge, it enables its professor to distinguish right from wrong; it lights the way to heaven. It is our friend in the desert, our company in solitude and companion when friendless. It guides us to happiness, it sustains us in misery, it is an ornament amongst friends and an armour against enemies.

Dear delegates, this, the Horn of Africa conference, is an excellent tool for the spreading and accumulation of knowledge, and it will no doubt contribute to a brighter future for the Horn of Africa – and for us all.

I wish you success in your noble endeavours!

Finally, on a personal note, I would like to take this opportunity to draw the attention of this esteemed assembly to the plight of the Swedish citizen Dawit Isaak who has been imprisoned since 2001.

We believe that Mr Isaak – regardless if he is guilty or not - has the right to be formally charged and to get his case tried before a court of law.

My concerns are shared by many citizens of Lund as well as my government in Stockholm.

I would therefore, as a personal wish, ask this assembly to give a moment of your thoughts and prayers to Mr. Isaak and his family.

With these words, I wish you a rewarding conference and an enjoyable stay in the City of Lund!

Thank you.

PART I

The Role of the Environment in the Development of the Horn of Africa

Towards Drought Monitoring in the Horn of Africa

Zoltan. Balint[1], F. Mutua[2], P. Muchiri[3]

Abstract

Drought in the Horn of Africa is one of the most important, most frequent and often misinterpreted natural phenomena. The definition itself requires clarification. "Drought" is used to explain many different types of food shortage situations caused by rainfall deficit, crop disease, armed conflicts, market problems, or just by aridity. Because of the incorrect diagnosis the treatment may also be wrong. Most existing drought related indexes are single parameter indicators, not able to reflect the complex nature of the drought and very difficult to use in a data scarce environment, like the one in the HoA[4], especially in Somalia. This study takes initial steps to create a drought index combining rainfall, temperature and NDVI[5] characteristics and compares the actual situation with the multi-year average characteristics.

Key words: drought, statistical index, rainfall, temperature, NDVI

1. Need for a composite drought assessment and monitoring methodology in Somalia

Drought is one of the most frequently used terms in African humanitarian actions, at the same time it is one of the most confused terms. Although originally it was quite well identified as a natural phenomenon, nowadays it is used for all kinds of food shortages. It is clear that malnutrition and food shortage can be caused by various factors. They can be caused by:

- droughts
- floods

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4 Horn of Africa
5 Normalized difference vegetation Index

- diseases
- human conflicts or
- Unsatisfactory use of resources, among others.

Unfortunately the term "drought" is often used for food shortages, which are not caused by "drought" in its original sense. Drought is a natural phenomenon causing failure in producing essential crops and other products needed for the food supply of humans and livestock. In order to find the proper remedy, it is important to find the proper diagnosis first. In case of a real drought, appropriate measures are needed to be taken, which must be different from measures for situations when food shortage is caused e.g. by armed conflicts or market problems. In countries where weather monitoring networks are regularly maintained and upgraded, meteorological droughts are monitored and assessed by methods based on physical or statistical models. Elsewhere, where climate monitoring is poor, such as the case in Somalia, meteorological droughts are often misinterpreted. As a consequence, the drought management strategies are not based on observed data and information. Although several studies have been prepared recently as a response to recurrent severe droughts in Somalia, the studies focused more on the impacts of droughts in the agriculture/livestock sectors than on the primary causes. There is therefore a definite need for a system that is able to measure the severity of the drought or the very existence of the drought on a pre-defined scale with objectively verifiable indicators.

The main aim of the present study is to elaborate a drought monitoring methodology that is able to measure the natural components of the drought by comparing the prevailing situation to the multi-year average situation at the given time of the year. As drought is a composite natural phenomenon, the methodology should be able to take into account at least three factors at the same time, which are (i) rainfall, (ii) soil moisture or its proxy, the NDVI and (iii) temperature. (It is known that wind is also an important factor in Somalia contributing to drought conditions, however, at present it cannot be included because of lack of data.)

This study therefore focuses on developing a simple and operational CDI[6] that:

(i) Clearly shows the dynamics of the drought development process

(ii) That utilises rainfall, temperature and NDVI as a soil moisture proxy with the corresponding run-lengths

(iii) Has a flexible computational period which can easily be changed by the user

(iv) Is applicable in situation of data gaps

2. Climate data availability

In Somalia most of the direct data needed for drought monitoring are discontinuous, or missing or very difficult to collect on site, neither is there an institution that can

6 Combined Drought Index

claim ownership of comprehensive data resource for planning and management of natural resources in Somalia. There is a general gap in climate observations for the period 1989-2003. The figure below is a bar chart that summarises the daily rainfall data availability in Somalia. The shaded cells indicate data availability.

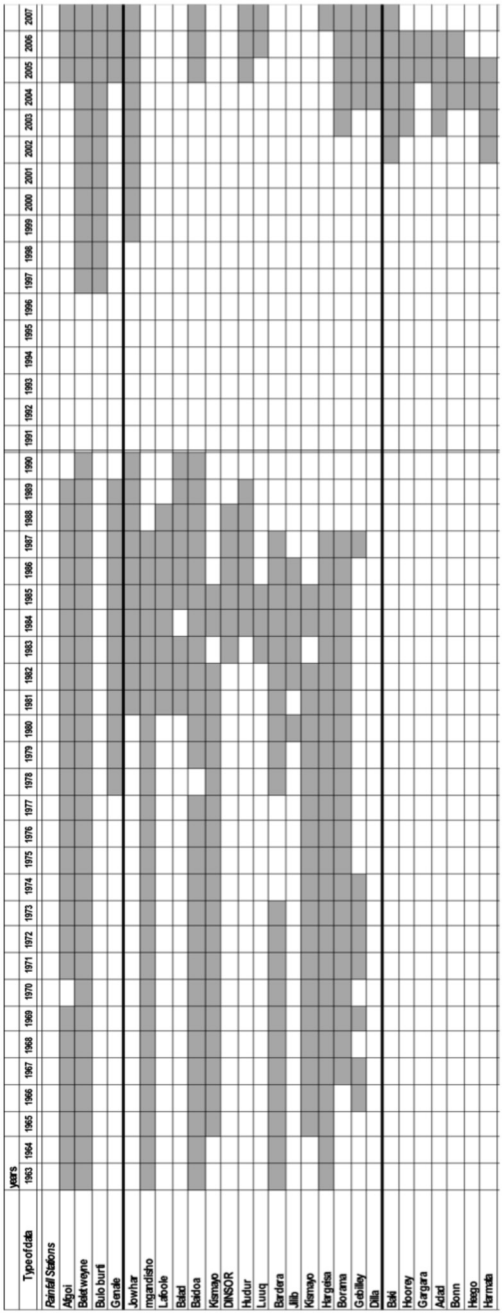

Figure 1: Daily Rainfall data availability in Somalia

As a result of SWALIM's efforts, the pre-war manual rainfall observation network with 68 rainfall stations has been rehabilitated and slightly extended, and a system of automatic weather stations is currently built in partnership with local authorities and international development organisations. The new system will provide data with adequate reliability and frequency to form a basis of continuous monitoring of drought tendencies in the future.

For the past years, however, Somali rainfall data series are discontinuous, practically no temperature time series were available and NDVI data series could only be established with limited reliability and continuity. The level of reliability and the discontinuity of historical data in Somalia gave reason for using data with higher reliability and better continuity for testing the methodology. It was therefore decided that Kenyan stations, some with similar climatologic characteristics to those in Somalia would serve as test data series, and once proven good, the methodology would be used in Somalia in real life.

The Kenyan stations which were utilized in this study were, Lodwar, Wajir, Kakamega, Dagoretti Corner, Narok, Embu and Meru. These stations represent a wide range of climates ranging from arid/semi-arid to humid. Kakamega is humid, Meru and Embu range between humid and semi-humid, Dagoretti Corner and Narok are semi-arid and Lodwar and Wajir range between arid and semi-arid. The map below shows the location of these stations on the map of Kenya. Although 8 Kenyan stations were analysed for testing purposes, the results of only three are presented in this report, because the others provided similar results, and the three demonstrate adequately the applicability of the method for monitoring the natural parameters of the drought.

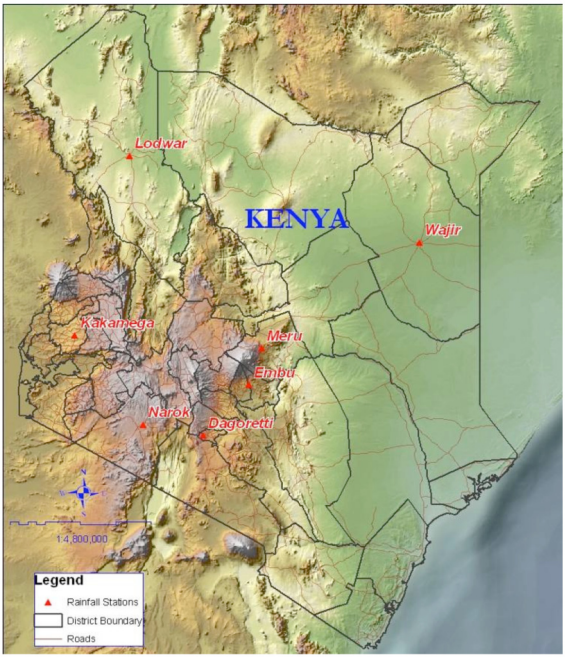

Figure 2: Location of the selected rainfall stations in Kenya

The dekadal and the monthly rainfall data for the Kenyan stations were obtained from KMD[7]. While the monthly data were available from the 1950s to June 2008 in all the selected stations, the dekadal data were available for the period 1993 to June 2008. The temperature data for these stations was made available for the period 1993-2003. The dekadal AVHRR[8] NDVI (8x8 km) data was used in this study. Extraction of NDVI values for the areas of interest was downloaded from the NOAA[9] website and converted to ASCII format using Windisp© software for the period June 1981 to July 2008. All statistical analysis was performed in MSExcel©.

In this study the analysis of three Kenyan test stations is presented, which are

- Dagoretti
- Narok and
- Lodwar

Four stations were analysed in Somalia, for which the data series were satisfactorily reconstructed

- Belet-Weyne
- Jowhar
- Afgoi and
- Boroma

7 Kenya Meteorological Department
8 Advanced very High Resolution
9 National Oceanographic and Atmospheric Administration

These 4 stations represent various climatic regions in Somalia. The location of the stations is shown in the map below (Figure 3.)

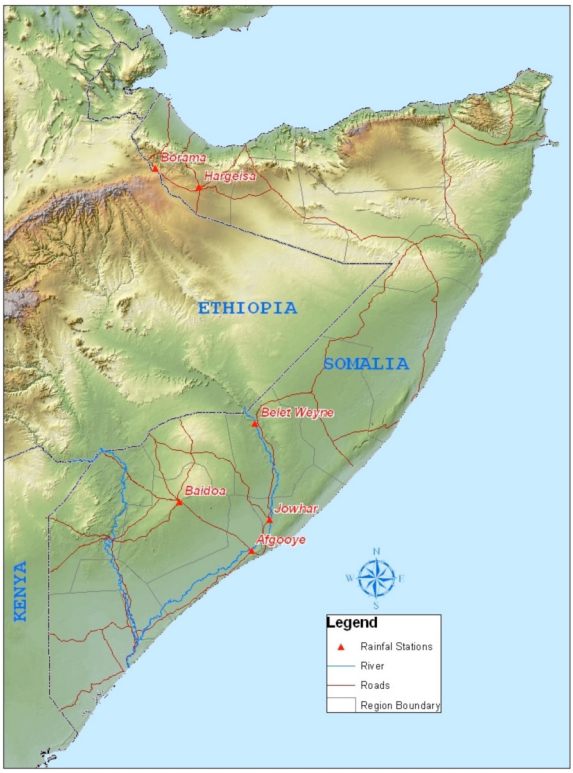

Figure 3: Location of selected rainfall stations in Somalia

3. The SWALIM Combined Drought Index

On the basis of the primary definition of drought as "an extended period during which fresh water availability (particularly rainfall and soil moisture) is below normal and temperatures (and or winds) are high…" the SWALIM Combined Drought Index includes:

(i) Rainfall amounts and the run-length of the rainfall deficits,

(ii) NDVI and the run-length of the below average NDVI values,

(iii) Temperature and the run-length of the above average temperatures.

Note: Run-length is the number of dekads continuously under or above the average.

The three components of the combined drought index CDI are by themselves single parameter drought indices. The rainfall index is herein referred to as the PDI[10], the NDVI drought proxy as the VDI[11] and the temperature drought proxy as the TDI[12]. In all these separate indices, the concepts of deficit and excess are used exhaustively.

It is important to note that the SWALIM CDI does not measure physical parameters of vegetation or soil, neither does it attempt to simulate the physical phenomena. It is a statistical comparison, it measures how much the present conditions deviate from the reference level, which is the multi-year long-term average, characteristic for the given dekad.

The reference level for calculating the deficit and excess in all cases of rainfall, temperature, NDVI and the run-length of all is the long term average.

The drought index for any of the above parameters in a given dekad (*m*) of a given year (*i*) measures the actual value of the parameter as compared to the multi-year average of the same parameter for the same dekad. If the ratio between the two

- equals 1.00, then the actual dekad can be considered "normal"
- greater than 1.00 then it is better than the "normal"
- small than 1.00, then it is worse than the "normal"

Better means more rainfall or lower temperatures and worse means drier or hotter weather.

The severity of the drought can be easily measured by the values of the above parameters. A value of 0.8 for example means close to normal, a value of 0.3, however indicates a very severe drought. A classification system for the above values can be elaborated in the future.

The PDI, VDI and TDI drought indices for dekad m of year i, have basically the same formulation and are given in the equations below:

$$PDI_{i,m} = \sqrt{\left(\frac{\frac{1}{n}\sum_{k=1}^{n} R_{m,(i-k)}^{(P)}}{R_{m,i}^{(P)}} \right)} * \frac{\sum_{j=1}^{5} P_{i,(m-j)}}{\frac{1}{n}\sum_{k=1}^{n}\left[\sum_{j=1}^{5} P_{(i-k),(m-j)}\right]}$$

$$VDI_{i,m} = \sqrt{\left(\frac{\frac{1}{n}\sum_{k=1}^{n} R_{m,(i-k)}^{(NDVI)}}{R_{m,i}^{(NDVI)}} \right)} * \frac{\sum_{m=1}^{5} NDVI_{i,(m-j)}}{\frac{1}{n}\sum_{k=1}^{n}\left[\sum_{j=1}^{5} NDVI_{(i-k),(m-j)}\right]}$$

10 Precipitation Drought Index
11 Vegetation Drought Index
12 Temperature Drought Index

$$TDI_{i,m} = \sqrt{\left(\frac{\frac{1}{n}\sum_{k=1}^{n} R^{(T)}_{m,(i-k)}}{R^{(T)}_{m,i}} \right)} * \frac{\frac{1}{n}\sum_{k=1}^{n}\left[\sum_{j=1}^{5} T_{(i-k),(m-j)}\right]}{\sum_{j=1}^{5} T_{i,(m-j)}}$$

Where:

PDI	Precipitation Drought Index
VDI	Vegetation Drought Index
TDI	Temperature Drought Index
CDI	SWALIM Combined Drought Index
P	precipitation
NDVI	Normalized Difference Vegetation Index
T	temperature
$R^{(P)}$	maximum number of successive dekads with below long term average rainfall in the previous 5 dekads.
$R^{(NDVI)}$	maximum number of successive dekads with below long term average NDVI in the previous 5 dekads.
$R^{(T)}$	maximum number of successive dekads with above long term average temperature in the previous 5 dekads.
n	number of years where relevant data are available
j	summation running parameter covering a period of 5 dekads
k	summation parameter covering the years where relevant data are available

The above mathematical expressions in words can be written as below, where LTM stands for long-term mean or long-term average.

Precipitation Drought Index =
Square root of ((LTM of max rainfall deficit runs in the past 5 dekads) / (Actual max rainfall deficit run in the past 5 dekads)) * (Actual rainfall amount in the past 5 dekads) / (LTM of rainfall amount for the past 5 dekads)

Vegetation Drought Index =
Square root of ((LTM of max NDVI deficit runs in the past 5 dekads) / (Actual max NDVI deficit run in the past 5 dekads)) * (Actual average NDVI in the past 5 dekads) / (LTM of NDVI for the past 5 dekads)

Temperature Drought Index =
Square root of ((LTM of max temperature excess runs in the past 5 dekads) / (Actual max temperature run in the past 5 dekads)) * (Actual average NDVI in the past 5 dekads) / (LTM of NDVI for the past 5 dekads)

Note that the temperature has inverse values compared to the other parameters. While with precipitation and NDVI small values signal drought conditions, with temperature it is the high values that contribute to drought. That is why in the first term temperature excess is used instead of deficit, and in the second term is the inverse of the above two.

Analysis of several time series showed that the multi-year average run-length never came even close to zero. However, in exceptional cases the actual run-length was zero. In order to avoid dividing by zero, in these cases it was assumed that half a dekad fell below the average value, which meant that the few zero values were substituted by 0.5.

It is important to note that the PDI, VDI and TDI are drought indices by themselves. There are no other existing simple indices to compare the VDI or the TDI with.

In the present study the length of the period used for the analysis is 5 dekads, which in Somali environment is approximately half of the season. However, depending on the purpose of the analysis the period can be extended to a whole season or decreased to a single dekad. In the first case the graph of the three indexes will be smoother, in the second case more fluctuating. The equations also can be adapted to yearly analysis, in which case however, attention must be paid to how to use the run-length, because of the recurrent dry seasons.

Analysing the Kenya decadal time series we can conclude that NDVI tended to peak approximately 2 dekads after the peak of the rainfall. Temperature does not closely follow either of them, although the tendency is very clear. Due to the limitations of data availability, it was not possible to determine the lag between rainfall and NDVI with a high confidence, and other factors also play an important role in the development of the NDVI graph as it will be seen further down.

Thus the combined drought index was computed as an equal-weighted average of the current TDI and VDI and the 2-dekad lagged PDI, as shown on the equation below:

$$CDI_{i,m} = (PDI_{i,m-2} + TDI_{i,m} + VDI_{i,m}) * \frac{1}{3}$$

4. Applications in Kenya and Somalia

The following figures 4.1, 4.2 and 4.3 show the distribution of the PDI, TDI, VDI and the CDI for three stations in Kenya.

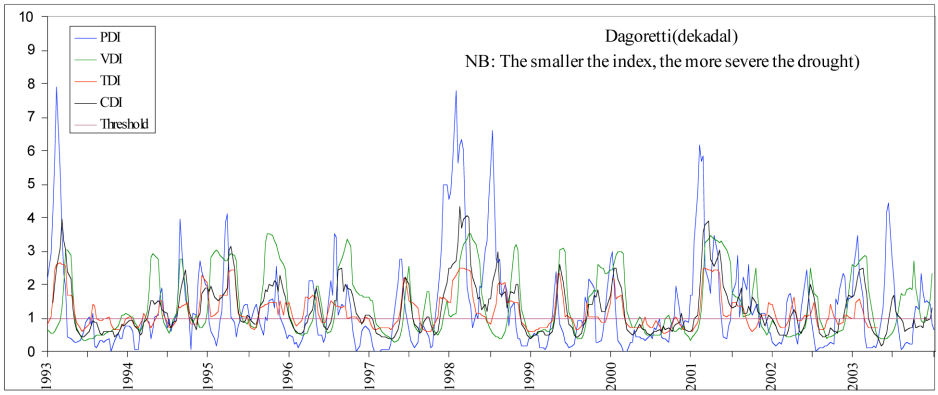

Figure 4.1

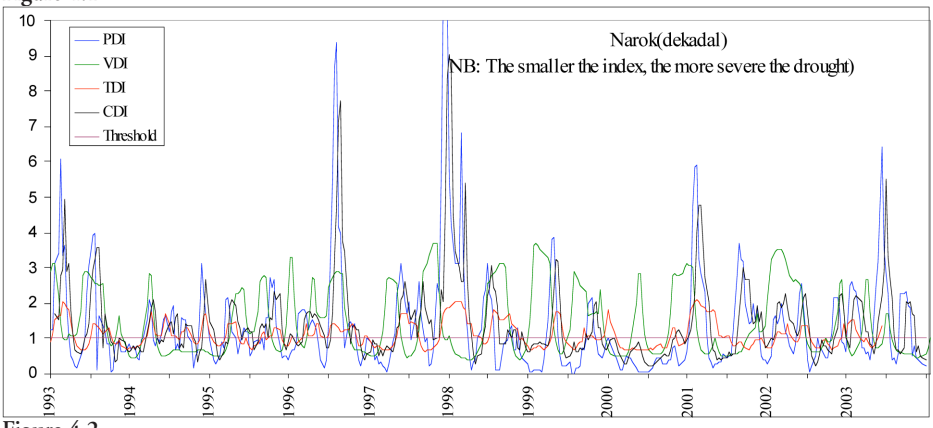

Figure 4.2

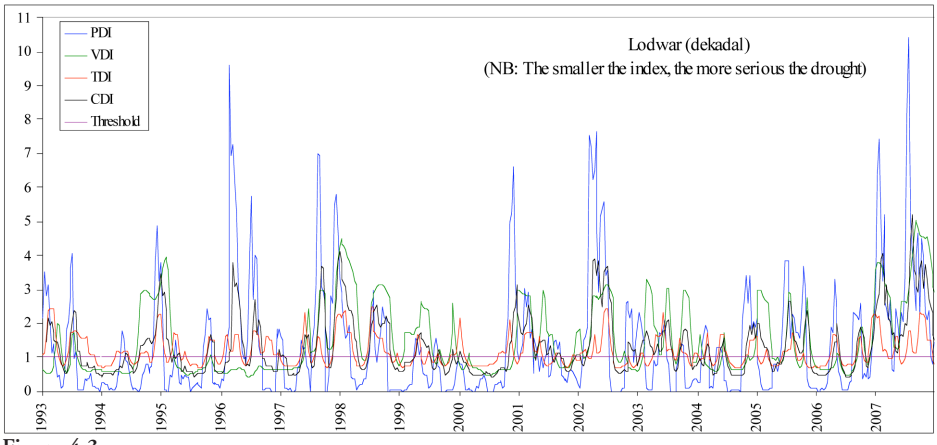

Figure 4.3

Figure 4: Distribution of the PDI, VDI, TDI and the CDI for stations in Kenya.

Four stations were selected in Somalia and the results are shown in Figure 5 as below

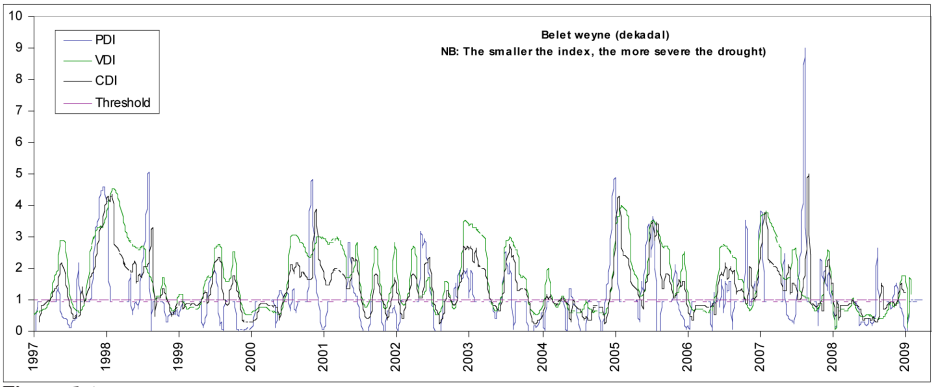

Figure 5.1

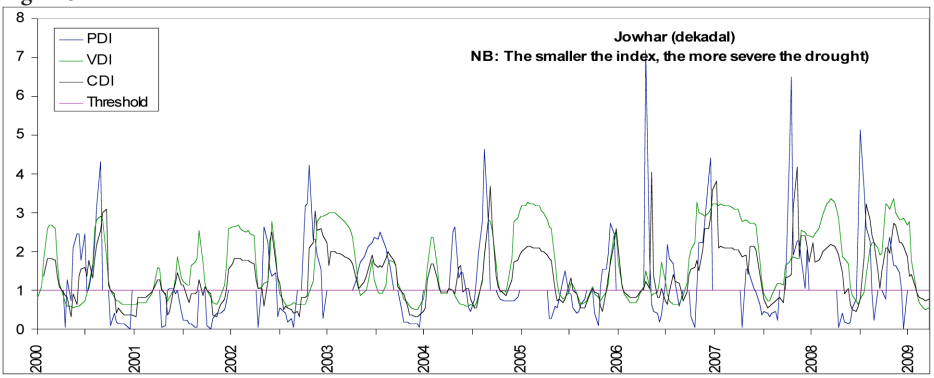

Figure 5.2

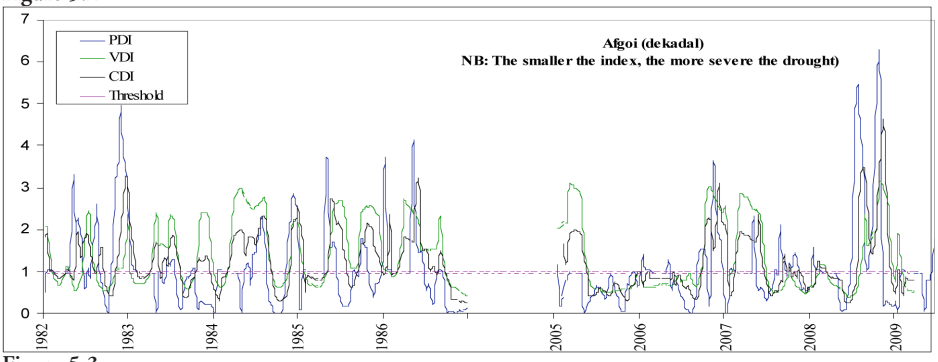

Figure 5.3

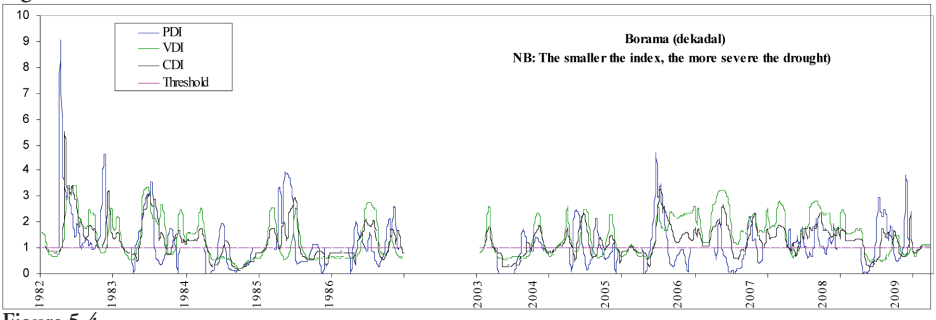

Figure 5.4

Figure 5: Distribution of the PDI, VDI, TDI and the CDI for stations in Somalia

5. Discussion of the results

The PDI is a new one-parameter drought index, which is applicable at any time scale up to one year. For large values of the PDI, wet conditions prevail and vice versa. At the one-month time scale, the results from the PDI can be compared to those of other drought indices.

A comparison of the PDI and the SPI[13](3) for monthly rainfall data in Kenya and Somalia yields the relationship which is illustrated on the figure shown below.

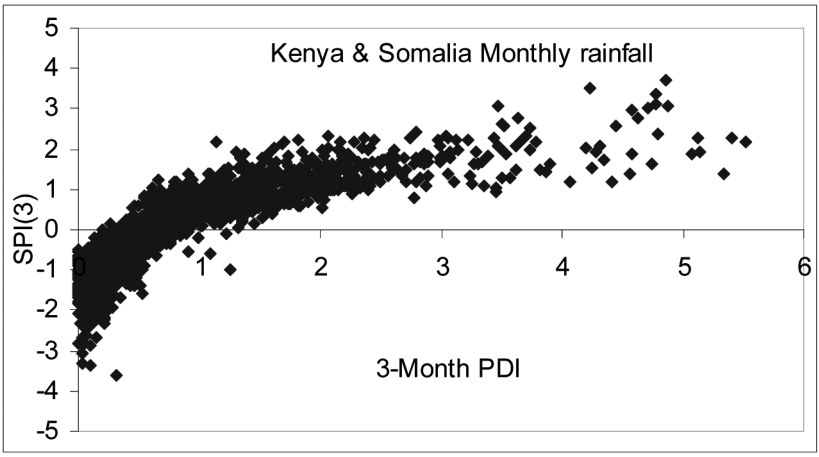

Figure 6: Comparison of PDI with SPI(3)

It is interesting to note that although the PDI is not designed to measure the severity of floods, the PDI relates very well with the SPI in the flood values of rainfall (PDI>2.0). By extension therefore, this tends to point out that; the SPI method may not be an appropriate measure of flood intensities. The PDI- SPI relationship within the drought range is approximately a cubic polynomial. Notwithstanding, the computation and data requirements of the PDI is less demanding that that of the SPI.

Similarly to the PDI, the TDI is also a new one-parameter drought index. The TDI is structured in such a way that it also gives high values when low temperatures persist and low values when high temperatures persist. During drought conditions, temperatures generally remain persistently high and therefore the TDI is low; while during the rains, the temperatures generally persist at lower levels, and therefore the TDI values remain high. Interestingly, the TDI is fairly and consistently in-phase with the PDI in all the studied cases. Consequently, it is justified to conclude that the TDI is a good index for drought assessment.

On the other hand, the VDI here is intended to be a measure of the health of the vegetation vis-à-vis the soil moisture availability. Persistently low soil moisture periods would give low values of VDI and vice versa. Thus, the VDI would behave more

13 Standardized Precipitation Index

or less the same patterns as the PDI and the TDI. Nevertheless, we would expect there to be a lag between the PDI and the VDI since in most cases, there is a time lag between the time of a rainfall commencement and its translation into healthy vegetation. Similarly, once good soil moisture content has been established, the state of the vegetation may stay healthy up to much later after the rains have ended. Thus, the VDI tends to build-up from the end of the rains to a maximum which is dependent on the temporal-rainfall-distribution and which occurs approximately 2 dekads after the rainfall maximum and then drops quickly to a minimum about 3 months after the end of the rains. These lags require more intensive analyses to confirm authentically. Further, while NDVI could be a good proxy for the soil moisture content over locations where there are minimal human interferences, it is important to note that in human habited locations, vegetation could be seriously interfered with as a consequence of human activities, particularly livestock keeping. Nevertheless, for the study cases, the analyses show that the VDI is generally consistent with the PDI and the TDI during the drought situations.

Vegetation growth depends on a number of factors besides the main factors which are the amount and run-length of deficiency of the rainfall and temperature. For instance it is known that small amounts of regular rainfall through an extended period are more favourable for vegetation growth than larger amounts falling in shorter periods. It is worth noting that this phenomenon is very well reflected in the above figures.

On the other hand, the PDI depicts higher frequency oscillations than the VDI or the TDI. The VDI and the TDI have a higher spatial representativeness (and therefore smoother) than the PDI. As expected also, the VDI seems to be smoother than either the PDI or the TDI. Further, in most cases, the PDI, TDI and the VDI are in-phase during the known major droughts in Kenya and Somalia. During other times when there are rainfall and NDVI excesses, these indices are not necessarily in phase although the patterns generally show wet conditions. When the three indices, PDI, TDI and VDI, are combined, the CDI comes out as a smooth index that seems to highlight the major droughts better than the PDI, VDI or the TDI in isolation.

6. Conclusions and Recommendations

The CDI is a simple multiple-parameter index which attempts to fulfil the basic requirements of the primary definition of drought. The CDI incorporates rainfall and temperature as the primary drivers of drought and NDVI as a secondary proxy of soil water availability. The rainfall and NDVI deficits and the temperature excess (all of which measure the degree of departure from the average) as well as the run lengths (which estimate the persistence of the drought) of the deficit-periods for rainfall and NDVI and temperature excesses are well represented in the formulation of the CDI. The index shows great potential in monitoring and perhaps assessing droughts

on dekadal, monthly, and seasonal scales. However, at the moment it is possible to monitor droughts in Somalia on monthly or dekadal time scale for a few stations only, where temperature data are concurrently available. It is on this basis that we strongly recommend intensification / strengthening of the initiatives for monitoring climate at different scales over Somalia. It is also important to do more analyses to establish the time lag between rainfall and NDVI maxima so that the correct CDI is computed. The CDI in principle is capable of capturing multi-season or multi-year droughts. Within the limitations of the present study, however, we were able to analyse only dekadal and monthly time series covering seasonal time-spans. Further analysis, based on reliable data series is needed to answer longer term drought related questions.

7. Acknowledgement

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Sustainable Development-Peace Nexus in Horn of Africa:
The Role of Multilateral Environmental Agreements(MEAs)?

Abdi Jama Ghedi

I. Background

The Horn of Africa refers to the geographical region falling within that horn-shaped part of Africa that protrudes into the Indian Ocean, from the continent's land mass in northeastern Africa. As an area without obvious physical or political boundaries, the Horn is somewhat difficult to define precisely. By its strictest definition, it includes the countries of Ethiopia, Somalia, Djibouti, Sudan and the northeastern region of Kenya with common and shared ecosystems, climatic and man-made disasters. During the decade of the 1970s, no area of Africa underwent more sudden and startling upheavals and went from relative neglect to intense courtship by the superpowers. The Horn has been a contentious area of the world whose recent history has been constantly marred by wars, revolutions, coups d'etat, territorial dispute and natural disasters (droughts, famine and humanitarian catastrophes).

In the Horn of Africa, the challenges of extreme poverty, weak State institutions, endemic conflicts, poor management of natural resources, failure to protect fundamental human rights and growing challenges related to climate change and steeply rising food and fuel prices remain. The fragility of eco-systems and the vulnerability of production systems to the vagaries of climate constitute a serious impediment for the region. Since many Horn of Africans depend on biomass use to meet their food needs, and these agro-silvo – pastoral production systems are very sensitive to the environmental degradations and changes which affect much of the region, *per capita* food production fell in the Horn of African (HOA) countries.

II. Violent Conflict Within and Between States

These has been one of the defining characteristics of the Great Lakes and Horn of Africa regions since independence. Virtually every country in the region has been

either directly or indirectly affected by conflict. Examples include the civil wars in Uganda, the 1997 Rwanda/ Uganda supported civil war in the Democratic Republic of Congo (DRC), the 1999 Ethiopia-Eritrea war over a disputed border region, and the long-standing civil wars in Somalia and Sudan, among others. These conflicts are a consequence of a complex and interconnected set of causative factors, such as poor governance, lack of democracy, monopolisation of political power by individuals or ethnic groups, policies of exclusion, corruption, human rights abuses, and poverty. In addition, environmental degradation and resource scarcity have played an important role in sustaining and driving conflicts in the region (See Lind, J and C Sturman, *Scarcity and Surfeit: Ecological Sources of Conflicts in Sub-Saharan Africa*, ACTS, 2002).

Africa in general has for the past 40 years been torn apart by inter-State, intra-State, ethnic, religious and economic and resource conflicts. Not less than 26 armed conflicts erupted in Africa between 1963 and 1968 affecting the lives of 474 million people representing 61% of the population of the Continent and claiming over 7 million lives. Besides, wars did not spare any geographic region of the Continent: the Horn of Africa (Ethiopia, The Sudan, Eritrea and Somalia) Southern Africa (12 conflicts) and West Africa, (some 10 wars) have been the theatre of conflicts. Only North Africa with the exception of Algeria remained relatively conflict-free.. Some of these wars lasted for quite long periods. For instance, the war in Chad persisted for 40 years; in South Sudan, the war lasted 37 years; in Eritrea, 30 years; and in Angola, 27 years, etc. One of the consequences of armed conflict is the emergence of refugees (*currently estimated at 3 million) and displaced persons (not less than 20 million) many of whom live in very difficult condition without adequate assistance from national governments or the international community*).

The types of conflict in Africa suggested by Zartman can provide one way of describing categorising these conflicts. The first category relates to decolonisation power struggles, where the desire for independence prompted armed struggles against the colonial powers. The second category emerged from attempts by post-colonial regimes to achieve consolidation and control of national political space.Under this category, attempts by the state to subdue regional, ethnic, ideological and personal ambitions led to violent struggles from which losers often fled into exile. The third category of conflicts are represented by what Zartman calls 'leftover liberation movements' which are sometimes legitimised as 'the sole and authentic representatives for their people'. The fourth category relates to disputes that arise over 'ill-defined territory' or conflict over state boundaries (Zartman, I W, *Ripe for Resolution Conflict and Intervention in Africa,* Oxford University Press, 1985).

The fifth category relates to conflicts that arise from 'structural rivalries'. They occur when states attempt to extend their influence outwards through regional interventions. The final category comprises conflicts of 'runaway means',which stem from external interests and "are activated primarily through alliances for political support and through arms for the military",which Zartman links with Cold War rivalry and its intervention in African politics.7With the end of Cold War, external influence has increasingly been exercised through conditionality attached to aid,which

can lead to political and economic reform or weaken ruling factions, particularly if aid is withheld. The conflicts in the Horn have important regional dimensions and there is therefore a need for an integrated regional framework to address them. Transboundary challenges posed by armed conflict include:

- Influxes of refugees crossing borders to escape conflict, with impacts from refugee camps and increased numbers of people in rural communities, and consequent pressure on natural resources and vegetation cover.
- The threat of armed insurgents from the other side of the border, affecting the security of conservation activities and creating the risk of conflict spilling across the border.
- An increase in illegal extraction of a shared resource, or damage to a shared ecosystem on one or both sides of the border.
- The spread of human and animal diseases, as abnormal transborder movements of people and livestock occur, and as human and livestock disease control measures break down. Livestock diseases may also affect wildlife.
- Lastly, weak and unclear economic and multilateral environmental agreements (MEAs).

In some cases, collaboration between neighboring countries can help to mitigate certain environmental impacts of conflict. The type of collaboration that is feasible depends on circumstances. Sometimes local action is possible on a relatively informal basis, even if more formal collaborative agreements between countries are not possible – for example, between wardens of neighboring protected areas or between neighboring communities .

III. Objectives

The paper focuses, first, the importance of Multilateral Environmental Agreements(MEAs) in the Horn of Africa natural resource conflict resolution; global and regional environmental inter-dependence; second, the weaknesses and lack of coherence within MEA and its implication in the Horn of Africa, and third, Somalia environmental challenges within MEAs (Chemicals, Law of SEA, CBD, Ramsar, UNCCC, etc) and externalities to the countries of the Horn of Africa .

IV. Theoretical Framework

This paper are the source of literature review, authors participation in international environmental events (chemicals, climate change, environmental governance and wetlands), and lastly my last 15 years of environmental research within European universities (Royal Institute of Technology, Stockholm, Sweden), Italy (Vierbo Agricultural University, Viterbo, Italy) and Somalia (Benadir University, Mogadishu); work experiences within Swedish EPA on trade and environment linkages (WTO, MEAs, DCs issues), Stockholm; international organizations working in Somalia (UNDP, Joint-Programme for Local Governance: ILO, UNDP, UNHABITAT, UNICEF and UNCDF); involvement with Somali diaspora organizations (Daryeel Association) in working in Somalia, and Somalia's Government institution (Ministry of Environment). The paper is mainly based on the importance of trans-boundary natural and shared ecosystems, food production and sustainable economic development in Horn of Africa through multilateral environmental agreements challenges, synergies and perspectives.

Ecosystems are of fundamental importance to environmental function and to sustainability, and they provide many goods and services critical to individuals and societies. These goods and services include: (i) providing food, fiber, fodder, shelter, medicines and energy; (ii) processing and storing carbon and nutrients; (iii) assimilating wastes; (iv) purifying water, regulating water runoff and moderating floods; (v) building soils and reducing soil degradation; (vi) providing opportunities for recreation and tourism; and (vii) housing the Earth's entire reservoir of genetic and species diversity. In addition, natural ecosystems have cultural, religious, aesthetic and intrinsic existence values.

Environmental management is now a well-accepted development issue in the Horn of Africa region. All the countries in this region are parties to key multilateral environmental agreements (MEAs), including the Rio Conventions on climate change, bio-diversity and desertification.

V. Conflict and MEAs in the Horn of Africa

Armed conflict is a very serious problem in parts of Africa today, where many countries are at risk of conflict, engaged in conflict, emerging from conflict, or in a long-term recovery phase. These conflicts are devastating. They cause untold suffering and enormous loss of human life; they fragment societies and shatter economies. They also wreak devastating harm on the environment, biodiversity, and the natural resources upon which people depend – impacts that are suffered long after hostilities end. today's conflicts are driven by a variety of motives with a wide range of contributing factors, among them ideology, access to resources, ethnicity, religion, greed,

distribution of power among social groups and between countries, weak states, and lack of leadership.

The negative impacts of armed conflict on the environment are becoming increasingly well documented in a growing body of literature (e.g., Austin and Bruch 2000; Blom *et al.* 2000; Blom and Yamindou 2001; Ham, in prep.; Hart and Mwinyihali 2001; Hatton *et al.* 2001; Jacobs and Schloeder 2001; Kalpers 2001a, 2001b; Matthew *et al.* 2001; Plumptre *et al.* 2001; Price, in press; Squire 2001). During and following armed conflict, an armed and lawless society can have both direct and indirect impacts on the environment. These impacts occur for subsistence, strategic, or commercial reasons, and often have political, social, and economic root causes. The main impacts of armed conflict on the environment occur through habitat destruction and loss of wildlife, over-exploitation and degradation of natural resources, and pollution, and weakening of environmental institutions and capacities.

Habitat destruction and the accompanying loss of wildlife are among the most common and far-reaching impacts of conflict on the environment, and occur for subsistence, strategic, or commercial reasons (charcoal production and export in Somalia). Habitats are sometimes directly affected during armed conflict. For example, vegetation may be cut, burned, or defoliated to improve mobility or visibility for troops. When large numbers of displaced people are temporarily resettled, they often clear away vegetation, to farm and to obtain firewood – practices that swiftly lead to deforestation and erosion. Since refugees and internally displaced people are often located in ecologically marginal and vulnerable areas, the ability of the environment to subsequently recover may be limited (see Mogadish-Afgoi corridor when 500.000 IDPs are settled without preventive environmental protection).

Over-exploitation of natural resources is often directly linked to armed conflict, and occurs for both subsistence and commercial reasons. One immediate result of political instability during war is that local people often cannot grow basic crops. For their survival, they are increasingly forced to depend on wild foods such as bushmeat and wild food plants. At the same time, displaced people usually collect firewood, food plants, and other natural resources in the areas they have moved to. Such exploitation on a large scale may be unsustainable even in the short term. The situation may be made worse if these people lack local knowledge of optimal resource management practices.

In all cases, the *breakdown of law enforcement* and traditional local controls makes sustainable resource management even more challenging. It is important to understand that incentives for local communities to conserve resources and species decrease when economic benefits from them decline. This is true even in areas that are not directly affected by armed conflict. During armed conflict, those in power are often in need of immediate revenue. To fund their military activities, they may turn to commercial-scale extraction of natural resources such as timber, ivory, and diamonds.

Armed conflicts may also lead to *"brain-drain*," when nationals with higher education in environmental fields flee the country and do not return. This can leave rela-

tively few well-educated people in the environmental sector, weakening post-conflict attempts at reconstruction and conservation (Plumptre *et al.* 2001).

The relationship between these conflicts and their impacts on the environment depends to a large extent on the type, intensity, and duration of the conflict. Conflicts in sub-Saharan Africa range from high intensity and relatively short duration (e.g., Republic of Congo (Brazzaville) and Central African Republic), to low intensity and long duration (Ethiopia, Mozambique, Angola, and Sudan). The characteristics of modern African conflicts – complex, unpredictable, and often driven by natural resource extraction – make them particularly damaging to the environment and those who depend on it. In many areas, war has radically altered economic, political, and social conditions, with profound impacts on the environment, natural resources, and biodiversity.

The Horn of Africa sub-region is of strategic importance to the work of the Multilateral Environmental Agreements (MEAs). The Horn of Africa covers 6 countries (Ethiopia, Kenya, Sudan, Somalia, Djibouti and Eritrea) that are experiencing some of the most compelling development and environmental challenges of the millennium. Food insecurity, poverty and conflicts are major problems in some key countries, while drought and floods are increasingly severe.

The present situation in Horn of Africa countries with regard to management of natural resources is complex. There is customary law, colonial law (Code Napoleon) and modern state law, layered on top of each other as it were. These legal codes, in and off themselves, are not necessarily suited to tackle the situation of local natural resource management (NRM) today.

The paper summarizes environmental impacts of habitat destruction and loss of wildlife; over-exploitation of natural resources; and pollution in Horn of Africa, in particular in Somalia. The main aim is to achieve long-term conservation goals, and enhance linkages between sustainable livelihoods and the environment. During conflict, local people often become more dependent on natural resources. During and immediately following armed conflict, the environment is often especially vulnerable, not least because it often falls low on the agenda of those in power. At the same time, controls over natural resources are often poor. Resources may be grabbed illegally and fed into new illegal trade networks, sometimes to purchase arms. The transition and reconstruction period is the time when short-term needs must be reconciled with longer-term sustainable practices. Ultimately, if long-term rural livelihood needs cannot be met because the natural resource base is depleted and ecological systems are damaged, there is a high risk of instability and a return to armed conflict.

The relationship between natural resource scarcity, environmental degradation, and armed conflict is rarely so clear, however. While links between resource scarcity and conflict may exist, these links may be circumstantial and may not directly follow from the scarcity itself. In many cases, natural resource scarcity and environmental degradation may be more accurately understood as symptoms of larger societal problems, rather than as direct causes of conflict itself (Uvin 1998). Indeed, armed conflicts often exacerbate existing problems as much as they create new ones.

Armed conflict can radically alter the political, social, and economic context in which conservation takes place – changing the balance of political power, eroding law and, destroying local and national economies, and fostering the development of alternative economies that favor elites. At the same time, armed conflicts often fragment societies, disrupt traditional natural resource management systems, divert resources away from development and conservation, and lower the priority of conservation in general. The environmental conservation sector has relatively little experience in dealing with social, economic, and political issues in armed conflict situations.

On a larger scale, national economies can collapse for a wide range of reasons, including disruption of trade, loss of outside investment, and loss of tourism revenue. In sum, armed conflict often reduces access to resources for many, increases access (often illegal) for a few, and creates a new array of winners and losers. There are several key political, social, and economic issues that can affect environmental governance and conservation during and following times of armed conflict, including:

- Governance issues
- Illicit trade networks
- Proliferation of arms
- Wartime and post-war rush for resources
- Post-war policy opportunities
- International conventions, legal and policy issues

The sustainable management of natural resources depends on good governance – that is, governance that is accountable, transparent, inclusive, participatory, respected, and effective in enforcing law and order. During armed conflict, however, governance structures are often weakened and find themselves unable to control or effectively manage these resources. A common underlying factor in conflict situations is a weak and collapse of state system, which reduces the ability to maintain territorial integrity, and thus the authority to control access to resources (Theodore Trefon, pers. Comm.). Weak or failed states, lawlessness, collapsed local or national economies, and increased reliance on natural resources during times of armed conflict all provide fertile ground for the development of illicit trade networks (de Merode 1998). The development of these networks – which can include everything from charcoal production, export from Somalia to Gulf State to use grilled meat and traditional *"shisha";* export of endangered species (both plants for pharmaceutical use and wildlife for traditional food in Asia and rare birds export for hunting in Gulf States and), international illegal fishing, dumping of toxic waste to Somalia's sea and land, etc.

The availability of arms, and the illegal exploitation of charcoal, timber, ivory, and other natural resources, is part of a vicious cycle in which these resources are used to purchase or barter for arms. These weapons, in turn, enable armed groups to maintain control over source areas for valuable resources and to develop and control illegal trade networks. Proliferation of arms from conflicts is also a major cause of increased

illegal hunting in many countries, not just for those countries directly engaged in conflict, but also for neighboring countries into which these arms are brought (e.g., from Somalia to Kenya). These weapons, in turn, enable armed groups to maintain control over source areas for valuable resources and to develop and control illegal trade networks. Proliferation of arms from conflicts is also a major cause of increased illegal hunting in many countries, not just for those countries directly engaged in conflict, but also for neighboring countries into which these arms are brought (e.g., from Somalia to Kenya).

The post-war period may also offer excellent opportunities for policy reforms that, if well planned, can help to promote sustainable rural livelihoods and environmental conservation. In theory, armed conflict is governed by an international legal framework that restrains the conduct of soldiers toward civilians and noncombatants, the natural environment, and any other nonmilitary targets, including wildlife. In practice, these laws are often ineffective, particularly during civil wars and other internal conflicts. Yet there has been increasing awareness of international conventions that protect the environment, and the need to improve their enforceability.

Even in the absence of a controlling legal authority, the very existence of international conventions may provide moral justification and financial means (e.g., by helping to attract donor funds) for continuing conservation work during conflict (Jay Austin, pers. comm.).

VI. Multilateral Environmental Agreements

International environmental law provides specific protections for the natural environment and wildlife that may extend to times of armed conflict. For example, the 1972 United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Convention establishes a clear framework for protection of designated World Heritage Sites, and its language suggests that it is meant to apply during wartime.

The Convention on International Trade in Endangered Species (CITES) restricts cross-border traffic in endangered animal and plant species at all times, as well as providing monitoring and enforcement mechanisms. However, the CITES treaty is primarily targeted at the problems caused by "business as usual," rather than the extreme emergency situations created by armed conflict (Jay Austin, pers. comm.).

Finally, in the aftermath of armed conflict, there have been increasing calls for ad-hoc legal mechanisms that could hold governing authorities and individuals financially accountable for damages to natural resources and wildlife. One existing model is the United Nations Compensation Commission, created to assess civil liability against the government of Iraq for its actions during the Persian Gulf War. The recent UN Panel of Experts report on DRC calls for a similar commission to inves-

tigate and adjudicate damage claims by the Congolese government (United Nations 2001).

What are Multilateral Environmental Agreements and Why Do They Exist?

Multilateral environmental agreements (MEAs) are voluntary commitments among sovereign nations that seek to address the effects and consequences of global and regional environmental degradation. MEAs address environmental problems with transboundary effects, traditionally domestic environmental issues that raise extra-jurisdictional concerns, and environmental risks to the global commons. The dramatic growth of MEAs as an integral component of international relations is attributable to several factors:

1. The development of environmental problems with global implications

The last two decades have seen unprecedented scientific research and public acknowledgement of the environmental threats to our planet. In particular, stratospheric ozone depletion, climate change, hazardous waste transportation, and biological diversity loss have increasingly received greater attention from national governments and the non-governmental business and environmental communities.

I. Stratospheric Ozone Depletion. In the past several years, scientific evidence has established a strong link between the depletion of the ozone layer and the release into the atmosphere of chlorine and bromine-laden chemicals such as chlorofluorocarbons (CFCs), halons, and carbon tetrachloride. The major MEA dedicated to halting the depletion of the ozone layer by encouraging restrictions on the production and consumption of ozone substances (ODS) is the *Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol)*.

II. Loss of Biodiversity. The extinction of plant and animal species throughout the world is occurring at a rapid rate and on a wide scale basis. Increases in world population growth, deforestation, and unsustainable harvesting of plant and animal wildlife have contributed to a severe weakening in the fragility of the Earth's delicate balance of biological diversity. The loss of species not only has profound impacts on the evolutionary process, but may also inhibit the development of medical and chemical discoveries of immeasurable value. In addition to a multitude of regional agreements, the *United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*5 and the *Convention on Biological Diversity (Biodiversity Convention)*6 are the two most prominent MEAs dedicated to the global protection of plants, animal species, and habitat.

III. Hazardous Waste Transportation and Disposal. The growing shortages of waste management capacity in many countries and the prohibitive costs of building hazardous waste disposal facilities within other nations, has led to dramatic increases in the export of hazardous waste. The *Basel Convention on the Control of*

*Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)*8 is widely recognized as the primary MEA associated with international hazardous waste transportation.

2. The need for cooperative multilateral solutions among sovereign nations to address global environmental threats

Principle 7 of the Rio Declaration at the 1992 United Nations Conference on Environment and Development (UNCED) emphasizes the duty of countries to co-operate in the quest for solutions to global or transboundary environmental problems.

3. Environmental problems are not exclusively restricted to their environmental consequences

The issues of ozone depletion, climate change, loss of biodiversity, and hazardous waste transportation, for example, have profound international economic competitiveness, political, and social implications.

Conclusion and Recommendations

Environmental factors are rarely, if ever, the sole cause of violent conflict. Ethnicity, adverse economic conditions, low levels of international trade and conflict in neighbouring countries are all significantly correlated as well. However, it is clear that the exploitation of natural resources and related environmental stresses can become significant drivers of violence (United Nations Environment Programme: From conflict to peacebuilding: The role of natural resources and the environment, 2009).

The environment in Horn of Africa is undergoing different types of deterioration (desertification, deforestation and charcoal production, soil erosion, water scarcity, weak and lack of environmental governance, etc). In order to correct the continuing disastrous trend, Horn of African countries must address the root causes of the deterioration. In this regard, action must be taking in four major areas. These are: i) transforming the agricultural and pastoral sectors to make it more productive and sustainable, ii) safeguarding and sustainably utilising the natural resource base, iii) pursuing accelerated socio-economic development to provide basic needs and alternative economic opportunities, and iv) participating, ratifying and utilizing resources and opportunities within multilateral environmental agreements (MEAs).

The environmental community in Horn of Africa has to take a wide range of actions at different levels in armed conflict situations. While it is not possible to avoid all of the environmental impacts these conflicts causes, it is possible to prevent or at least mitigate some of them. This often requires new approaches in working toward long-term conservation goals. Understanding of impacts, the underlying causes, and appropriate mitigation approaches is growing, but is still incomplete.

The summary recommendations are the following:

- To increase understanding of ways in which the environment can act as an important catalyst for **cooperation**, **trust building, conflict prevention and resolution;**
- Approaching environmental conservation from a development and economic perspective through post-conflict reconstruction plans and trans-boundary approach;
- Promoting awareness of longer term environmental consequences of resource depletion, and participating where possible in decision-making processes;
- Building capacity for policy formulation (e.g., arrange training courses and study tours to other countries for policy makers to see different policies in action);
- Reinforce and strengthen local, national, and international multilateral environmental capacities.

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ANNEXES

Figure 1. Map of Somalia

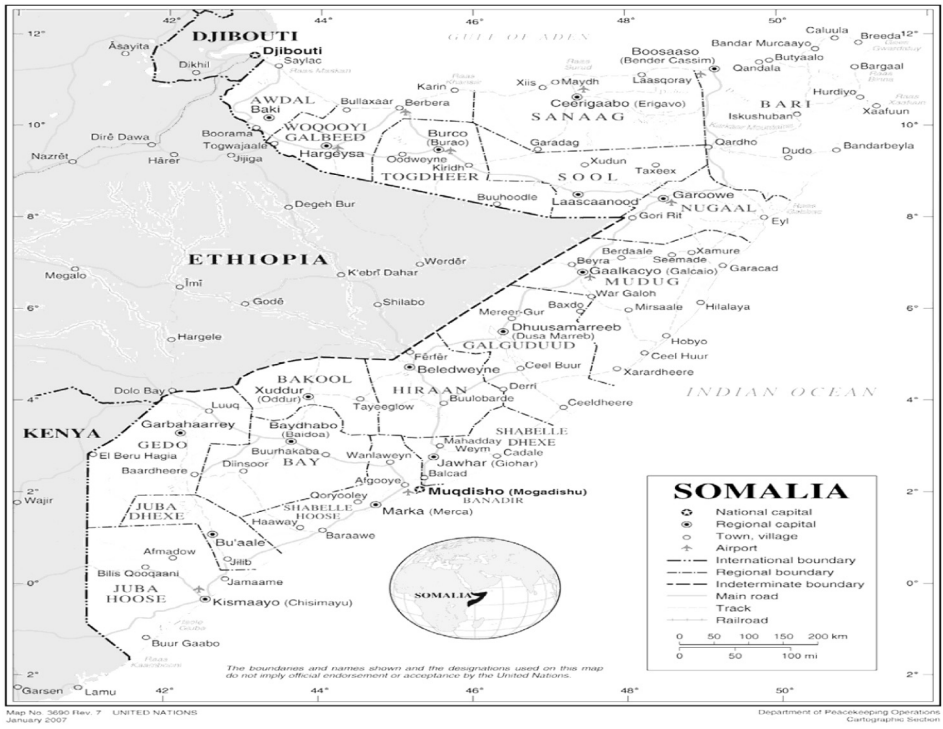
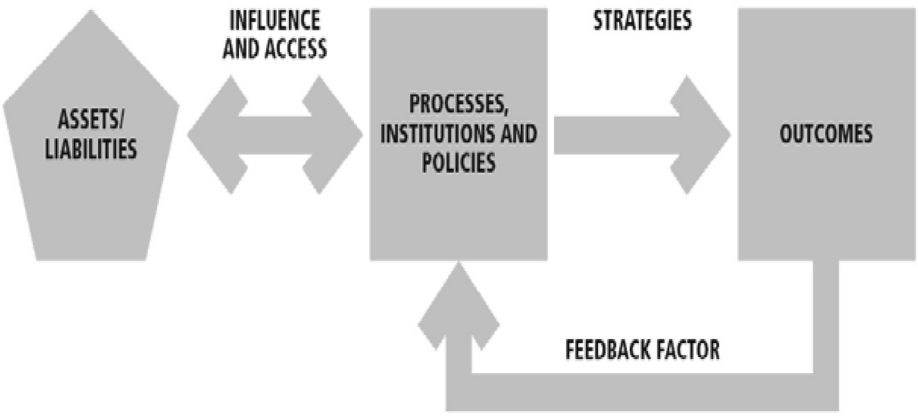


Figure 2. A livelihood model for conflict settings



Source: Lautze and Raven Roberts 2006.

Table 1: Recent civil wars and internal unrest fuelled by natural resources[30]

Country	Duration	Resources
Afghanistan	1978-2001	Gems, timber, opium
Angola	1975-2002	Oil, diamonds
Burma	1949-	Timber, tin, gems, opium
Cambodia	1978-1997	Timber, gems
Colombia	1984-	Oil, gold, coca, timber, emeralds
Congo, Dem Rep. of	1996-1998, 1998-2003, 2003-2008	Copper, coltan, diamonds, gold, cobalt, timber, tin
Congo, Rep. of	1997-	Oil
Côte d'Ivoire	2002-2007	Diamonds, cocoa, cotton
Indonesia – Aceh	1975-2006	Timber, natural gas
Indonesia – West Papua	1969-	Copper, gold, timber
Liberia	1989-2003	Timber, diamonds, iron, palm oil, cocoa, coffee, rubber, gold
Nepal	1996-2007	Yarsa gumba (fungus)
PNG – Bougainville	1989-1998	Copper, gold
Peru	1980-1995	Coca
Senegal – Casamance	1982-	Timber, cashew nuts
Sierra Leone	1991-2000	Diamonds, cocoa, coffee
Somalia	1991-	Fish, charcoal
Sudan	1983-2005	Oil

Source: UNEP, 2009

Fig 1: Armed Conflict and Environment Relationships

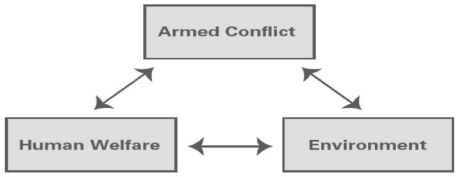
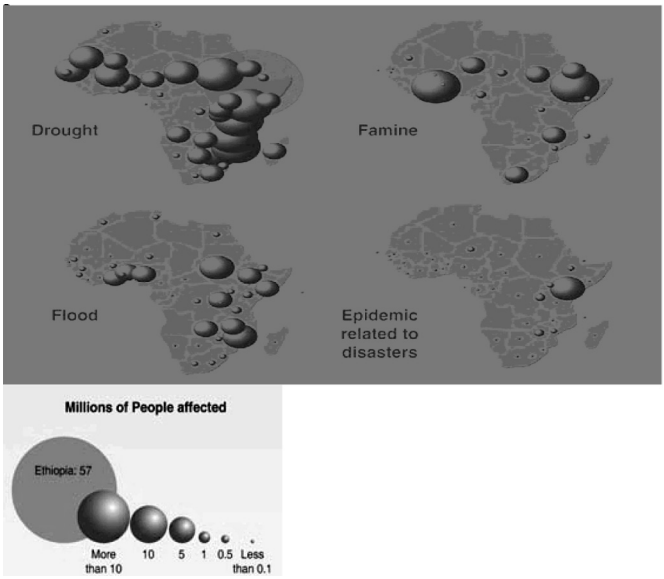


Diagram: Homer-Dixon (1994).

Figure 13 – People affected by natural disasters during the period 1971-2001



Source: Office of US Foreign Disaster Assistance (OFDA) and Centre for Research on the Epidemiology of Disasters(CRED) of the Université Catholique de Louvain, 2002.

Fig 3: Overalpping Role on Environment of International Organisations
Three types of relationship to the environment are illustrated graphically.

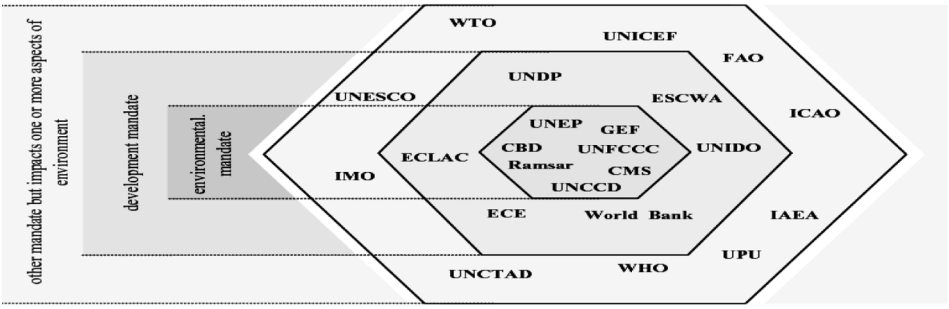


Table 1: Indicative list of thematic complementarities among the Rio Conventions

	CBD	UNCCD	UNFCCC
Conservation, Sustainable Use and Sharing of Benefits of Biodiversity	**Article 1**	Annex I - Regional Implementation Annex for Africa Article 8.3 b(i) NAPs must ensure integrated and sustainable management of natural resources including biodiversity	Article 4.1 (d) Promote sustainable management, and promote and cooperate in the conservation and enhancement of sinks and reservoirs […]
Land degradation	Decision VII/2 Par 1 PoW Activities 1,2 and 3	**Article 2**	Decision IX/13 Good Practice Guidance and Other Information on Land Use, Land-Use Change and Forestry
Adaptation to and Mitigation of Climate Change	Decision VII/4 PoW Activity 4 Decision VII/15	Decision V/3 Annex E par 16	**Article 2**
Food Security/(incl. Agro-biodiversity)	Decision VII/3	Thematic Programme Network 6: Promotion of sustainable agricultural farming systems	Art 2
Water management	Decision V/23 Decision VII/2 PoW Activity 7(e)	Decision VI/1 Art 8	IPCC Report: Climate Change 2001: Impacts, Adaptation and Vulnerability Hydrology and Water Resources
Renewable energy	AHTEG Report on Interlinkages Between Biological Diversity and Climate Change CBD Technical Series # 10 (4.10) Identifies the potential benefits of renewable energy for biodiversity	Decision VI/1 Art 8 Thematic Programme Network 5	Decision VIII/1(k)
Sustainable Forest Management	Decision VI/22	Decision VI/12 Art 5	Article 4.1 (d) Decision IX/19: Modalities and Procedures for Afforestation and Reforestation Project Activities under the CDM
Technology Transfer	Article 16 Decision VII/2 PoW Act 7(b) Decision VII/29	Article 18 Decision VI/9 par 1(d)	Art 4 par 1(c), par 5 and par 9 Decision VIII/10
Poverty Alleviation	Decision VII/2 Par 6 and PoW Activity 4,5 and 9	Decision VI/2 Art 5 Decision VI/4 Art 3	Prologue Par. 21 Decision VIII/1 par 7 Decision IX/5.1 (b)
Traditional Knowledge	Article 8(j)	Decision VI/16	Decision IX/11 on traditional knowledge as supplement for climate monitoring
	Joint Programme of Work between UNCCD and CBD Elements A1.2 and B.3		
Education and Public Awareness	Decision V/17 par 5 PoW Activity 7(i)	Decision VI/1 par 30-35	Article 6 Dec IX/4 2(a) - request to GEF
Ecosystem approach	Decision V/6	Decision VI/12	SBI and SBSTA Espoo Workshops Recognized ecosystem approach as an instrument to achieve synergy between MEAs.

	CBD	UNCCD	UNFCCC
Link to MDGs	Decision VII/11 (Ecosystem approach) Decision VII/12 (Sustainable use) Decision VII/19 (Access and benefit sharing) Decision VII/27 (Mountain biodiversity)	Decision VI/2	Decision IX/5 (Special climate change Fund) Decision IX/6 (Least Developed Countries Fund)
Restoration and rehabilitation	Decision VII/2 par 5 PoW Activity 7(b)	Decision VI/1 (Para 8-12)	Art 4.1(e) Kyoto Protocol Art 2.1 (a) (ii)
Targets	Decision VI/7 Annex Para 7 Decision VII/10	Decision V/17	Kyoto Protocol: Art 3 (Annex B)
Soil conservation	Decision VI/5 (Soil Biodiversity)	Article 4.1 (f and g)	Decision IX/13
Assessing trends/indicators	Decision VII/6 Decision VII/8 Decision VI/7	Decision VI/17 Decision VI/19	Decision IX/11

From CBD (2004)[1].

Table 2: Indicative list of complementary provisions in the Rio Agreements[2]

	UNFCCC	CBD	UNCCD
National Inventories/Identification and Monitoring	Article 4.1(a)	Article 7	Article 16
National & Regional Plans	Article 4.1(b)	Article 6(a)(b)	Article 9,10
Legislation	Preamble	Article 8(k)	Article 5(e)
Research	Article 5	Article 12(b)	Article 17,19 (b)
Public Education	Article 6	Article 13	Article 5(d),19,6
Environmental Impact Assessment	Article 4.2(d)	Article 14	
Clearinghouse for exchange of technical information	Article 7	Article 17, 18	Article 16
Public Participation	Article 6 (a)(iii)	Article 14.1 (a)	Article 19(3)
COP/ assess implementation	Article 7	Article 23	Article 22
Training	Article 6	Article 12(a)	Article 19
Reporting	Article 12	Article 26	Article 26
Examine obligations-assess implementation	Article 7 (e)	Article 23	
Financial resources and financial mechanism	Article 11	Article 20, 21	Article 20
Technology transfer and cooperation	Article 4	Article 16, 18	Article 12, 18

From CBD, 2004.

Figure 1: From conflict to peacebuilding: The role of natural resources and the environment

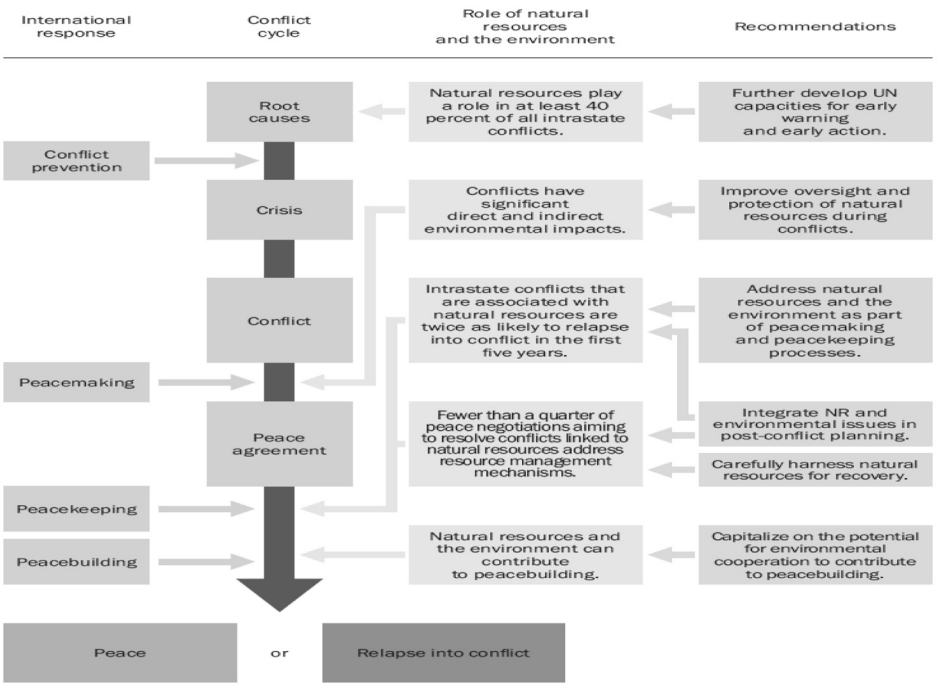
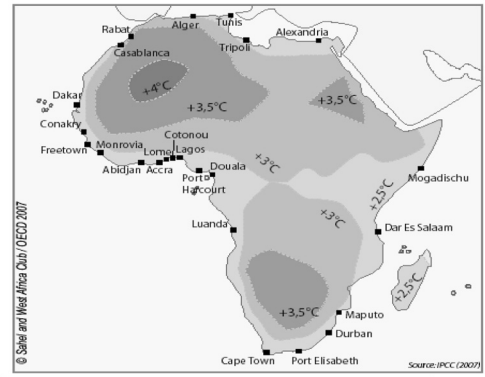


Figure 5: The effects of Global Warming in Africa Figure 6: Rainfall variations (%) in Africa



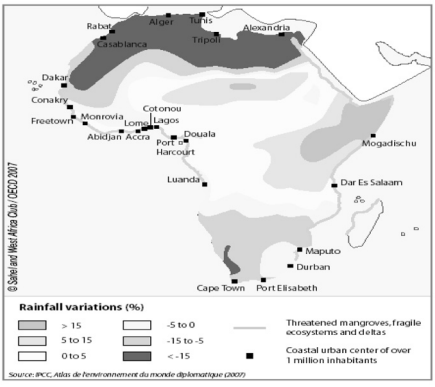


Figure 7: Examples of current and possible future impacts and vulnerabilities associated with climatevariability and climate change in Africa

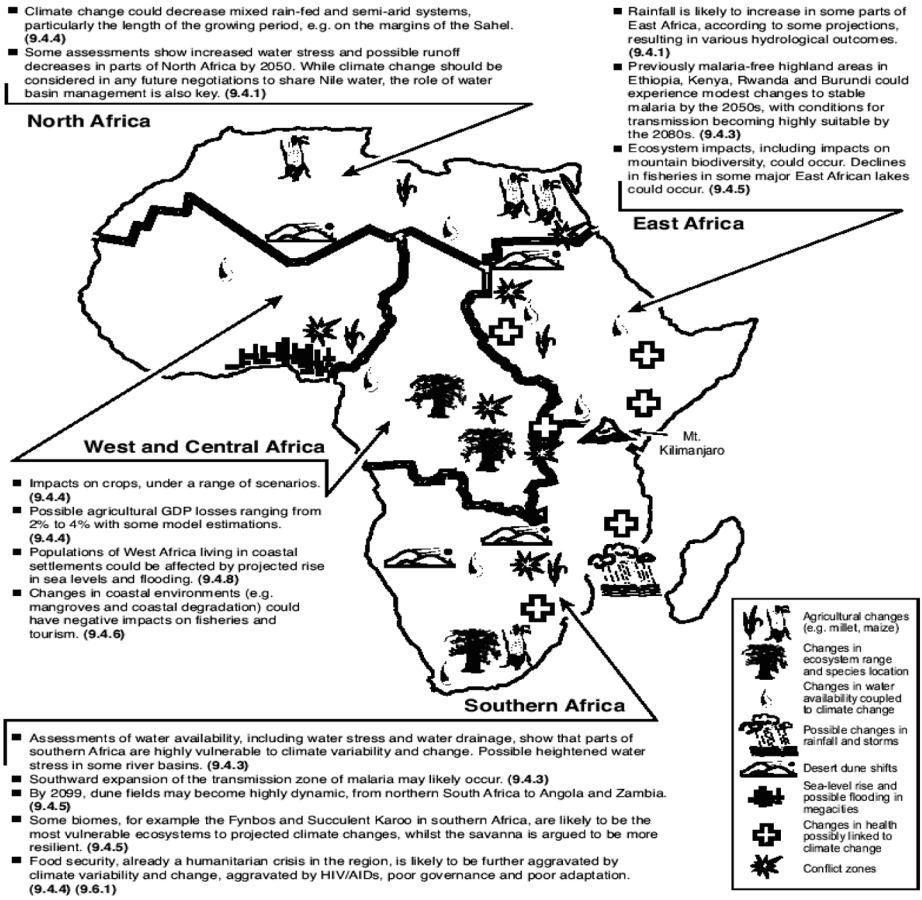
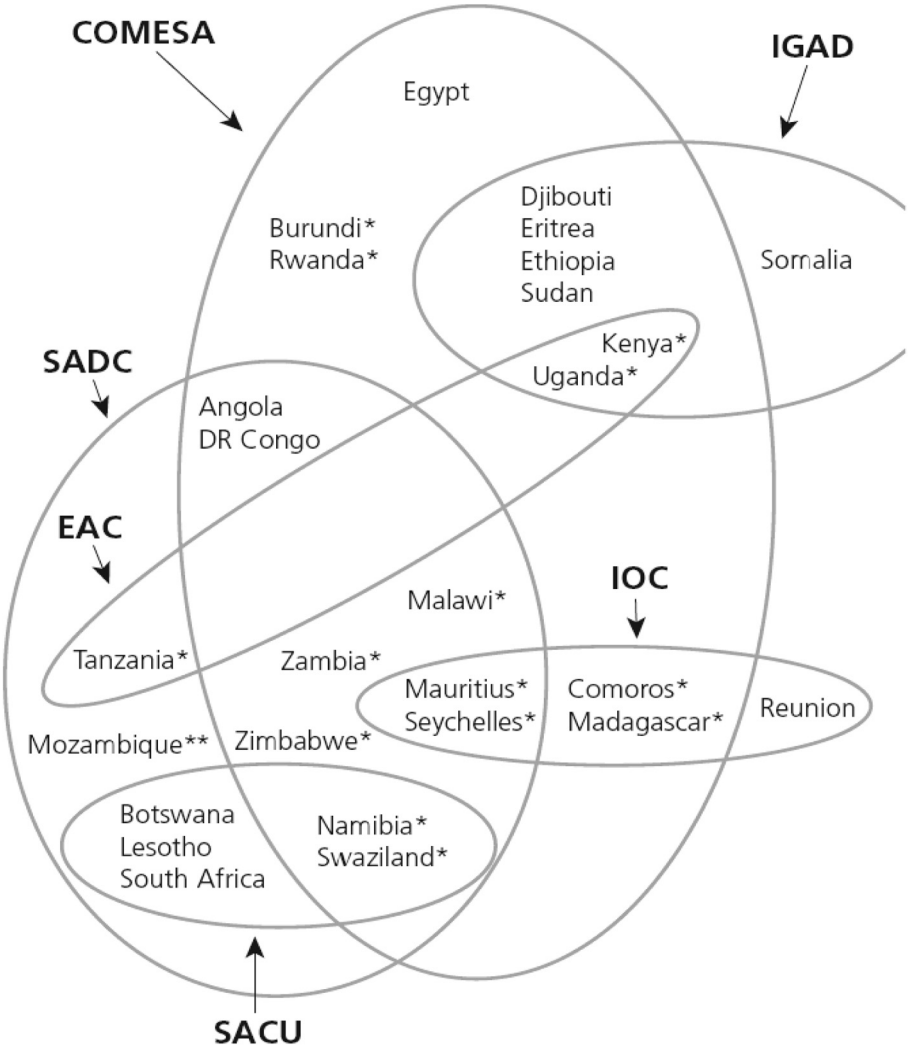


Figure 1: Chart of East and Southern Africa Regional Economic Integration Arrangement



COMESA	Common Market for Eastern and Southern Africa	**SACU**	Southern African Customs Union
EAC	East African Cooperation	**SADC**	Southern African Development Community
IGAD	Intergovernmental Authority on Development	**RIFF*	*Regional Integration Facilitation Forum*
IOC	Indian Ocean Commission	***RIFF*	*Observer status*

Key UN documents on environment, conflict and peacebuilding

1. Policy Reports and Statements of the UN Secretary-General

Statement of the Secretary-General on the International Day for Preventing the Exploitation of the Environment in

War and Armed Conflict (2008):82 "The environment and natural resources are crucial in consolidating peace within and between war-torn societies […] Lasting peace in Darfur will depend in part on resolving the underlying competition for water and fertile land. And there can be no durable peace in Afghanistan if the natural resources that sustain livelihoods and ecosystems are destroyed. The United Nations attaches great importance to ensuring that action on the environment is part of our approach to peace. Protecting the environment can help countries create employment opportunities, promote development and avoid a relapse into armed conflict. On this International Day, let us renew our commitment to preventing the exploitation of the environment in times of conflict, and to protecting the environment as a pillar of our work for peace."

Statement of the Secretary-General at the Security Council Debate on Energy, Security and Climate (2007):83 "In a series of reports on conflict prevention, my predecessor, Secretary-General Kofi Annan, pointed to the threats emanating from environmental degradation and resource scarcity. Let me quote from the latest of the reports: 'Environmental degradation has the potential to destabilize already conflict-prone regions, especially when compounded by inequitable access or politicization of access to scarce resources.' I urge Member States to renew their efforts to agree on ways that allow all of us to live sustainably within the planet's means."

A/61/583: Report of the Secretary-General's High-Level Panel on System-Wide Coherence: Delivering as One (2006):84 "Poverty, environmental degradation, and lagging development exacerbate vulnerability and instability to the detriment of us all […] There is an increasingly compelling case for taking urgent action on the environment […] There can be no long-term development without environmental care. In a global and interdependent world economic objectives and environmental objectives increasingly reinforce each other. Environmental priorities have too often been compartmentalized in isolation from economic development priorities. However, global environmental degradation – including climate change – will have far-reaching economic and social implications that affect the world's ability to meet the Millennium Development Goals. Because the impacts are global and felt disproportionately by the poor, coordinated multilateral action to promote environmental sustainability is urgently required."

A/59/565: Secretary-General's High-Level Panel on Threats, Challenges and Change (2004):85 "Threats to security are interconnected […] Poverty, infectious disease, environmental degradation and war feed one another in a deadly cycle […] Environmental stress, caused by large populations and shortages of land and other natural resources, can contribute to civil violence […] Yet rarely are environmental concerns factored into security, development or humanitarian strategies […] More legal mechanisms are necessary in the area of natural resources, fights over which have often been an obstacle to peace […] A new challenge for the United Nations is to provide support to weak States – especially, but not limited to, those recovering from war – in the management of their natural resources to avoid future conflicts."

A/58/323: Secretary-General's Report on the Implementation of the United Nations Millennium Declaration (2003):86 "The more immediate concern for most of our fellow human beings is with 'soft threats' to their security, such as those posed by environmental problems, contagious diseases, economic dislocation, crime, domestic violence, oppressive or corrupt management at all levels […] The implications of the scarcity of a number of natural resources, the mismanagement or depletion of such resources and unequal access to them should also be recognized as potential causes of conflict and should be more systematically addressed as such by the international community."

A/55/985 – S/2001/574:87 **Secretary-General's Report on the Prevention of Armed Conflict (2001):** "The United Nations should strengthen its capacity to help coordinate the international efforts of all actors to carry out structural prevention strategies […] In addressing the root causes of armed conflict, the United Nations system will need to devote greater attention to the potential threats posed by environmental problems."

A/55/305 - S/2000/809 Report of the Panel on UN Peace Operations (2000):88 "Other variables that affect the difficulty of peace implementation include, first, the sources of the conflict. These can range from economics (e.g. issues of poverty, distribution, discrimination or corruption), politics (an

unalloyed contest for power) and resource and other environmental issues (such as competition for scarce water) to issues of ethnicity, religion or gross violations of human rights."

2. Statements and Resolutions of the UN Security Council

S/PRST/2007/22:89 **Maintenance of international peace and security: natural resources and conflict.** "The Security Council recalls the principles of the Charter of the United Nations and in particular the Security Council's primary responsibility for the maintenance of international peace and security. In this respect, the Security Council recognizes the role that natural resources can play in armed conflict and post-conflict situations […] Moreover, the Security Council notes that, in specific armed conflict situations, the exploitation, trafficking, and illicit trade of natural resources have played a role in areas where they have contributed to the outbreak, escalation or continuation of armed conflict. The Security Council, through its various resolutions, has taken measures on this issue, more specifically to prevent illegal exploitation of natural resources, especially diamonds and timber, from fuelling armed conflicts and to encourage transparent and lawful management of natural resources, including the clarification of the responsibility of management of natural resources, and has established sanctions committees and groups and panels of experts to oversee the implementation of those measures […] The Security Council acknowledges the crucial role that the Peacebuilding Commission, together with other UN and non-UN actors, can play, in post-conflict situations, in assisting governments, upon their request, in ensuring that natural resources become an engine for sustainable development […] The Security Council also stresses that the use, disposal and management of natural resources is a multifaceted and cross-sector issue that involves various UN organizations. In this regard, the Security Council acknowledges the valuable contribution of various UN organizations in promoting lawful, transparent and sustainable management and exploitation of natural resources […] The Security Council recognizes, in armed conflict and post-conflict situations, the need for a more coordinated approach by the United Nations, regional organizations and governments concerned, in particular the empowerment of governments in post-conflict situations to better manage their resources."

S/PRST/2007/1:90 **Threats to international peace and security.** "The Security Council emphasizes the importance of post-conflict peacebuilding to assist countries emerging from conflict in laying the foundation for sustainable peace and development and, in this context, welcomes the establishment of the Peacebuilding Commission that should play an important role to achieve the objective of improving United Nations capacity to coordinate with regional organizations, countries in the relevant regions, donors, troop contributors and recipient countries and to perform peacebuilding activities, in particular from the start of peacekeeping operations through stabilization, reconstruction and development."

SCR 1625/2005:91 **Declaration on strengthening the effectiveness of the Security Council's role in conflict prevention, particularly in Africa.** "Reaffirming the need to adopt a broad strategy of conflict prevention, which addresses the root causes of armed conflict and political and social crises in a comprehensive manner, including by promoting sustainable development, poverty eradication, national reconciliation, good governance, democracy, gender equality, the rule of law and respect for and protection of human rights […] Recognizing the need to strengthen the important role of the United Nations in the prevention of violent conflicts, and to develop effective partnerships between the Council and regional organizations, in particular the African Union and its sub-regional organizations, in order to enable early responses to disputes and emerging crises."

SCR 1565/2004:92 **The situation concerning the Democratic Republic of Congo**: "Recalls the link between the illicit exploitation and trade of natural resources in certain regions and the fuelling of armed conflicts and […] condemns categorically the illegal exploitation of the natural resources and other sources of wealth of the Democratic Republic of the Congo, urges all States, especially those in the region including the Democratic Republic of the Congo itself, to take appropriate steps in order to end these illegal activities, including if necessary through judicial means, and to report to the Council as appropriate, and exhorts the international financial institutions to assist the Government of National Unity and Transition in establishing efficient and transparent control of the exploitation of natural resources."

SCR 1509/2003:93 **The situation in Liberia**. "Acting under Chapter VII of the Charter of the United Nations, decides to establish the United Nations Mission in Liberia (UNMIL), the stabilization force

called for in resolution 1497 (2003), for a period of 12 months […] Decides that UNMIL shall have the following mandate: […] (r) to assist the transitional government in restoring proper administration of natural resources."

3. Resolutions and Reports of the UN General Assembly

A/RES/62/163 (2008):94 **Promotion of peace as a vital requirement for the full enjoyment of all human rights by all.** "Recognizing that peace and development are mutually reinforcing, including in the prevention of armed conflict […] Affirming that human rights include social, economic and cultural rights and the right to peace, a healthy environment and development, and that development is in fact the realization of those rights."

A/RES/62/28 (2008):95 **Observance of environmental norms in the drafting and implementation of agreements on disarmament and arms control.** "Emphasizing the importance of the observance of environmental norms in the preparation and implementation of disarmament and arms limitation agreements […] Reaffirms that international disarmament forums should take fully into account the relevant environmental norms in negotiating treaties and agreements on disarmament and arms limitation and that all States, through their actions, should contribute fully to ensuring compliance with the aforementioned norms in the implementation of treaties and conventions to which they are parties […] Calls upon States to adopt unilateral, bilateral, regional and multilateral measures so as to contribute to ensuring the application of scientific and technological progress within the framework of international security, disarmament and other related spheres, without detriment to the environment or to its effective contribution to attaining sustainable development."

A/RES/61/28 (2007):96 **The role of diamonds in fuelling conflict: breaking the link between the illicit transaction of rough diamonds and armed conflict as a contribution to prevention and settlement of conflicts.** "Recognizing that the trade in conflict diamonds continues to be a matter of serious international concern, which can be directly linked to the fuelling of armed conflict, the activities of rebel movements aimed at undermining or overthrowing legitimate Governments and the illicit traffic in and proliferation of armaments, especially small arms and light weapons […] Reaffirms its strong and continuing support for the Kimberley Process Certification Scheme and the Kimberley Process as a whole […] Recognizes that the Kimberley Process Certification Scheme can help to ensure the effective implementation of relevant resolutions of the Security Council containing sanctions on the trade in conflict diamonds and act as a mechanism for the prevention of future conflicts, and calls for the full implementation of existing Council measures targeting the illicit trade in rough diamonds, particularly conflict diamonds which play a role in fuelling conflict."

A/RES/60/223 (2006):97 **Implementation of the recommendations contained in the report of the Secretary-General on the causes of conflict and the promotion of durable peace and sustainable development in Africa.** "Underlines the need to address the negative implications of the illegal exploitation of natural resources in all its aspects on peace, security and development in Africa, noting, in this context, the relevant recommendations contained in the progress report of the Secretary-General […] Stresses the critical importance of a regional approach to conflict prevention, particularly regarding cross-border issues such as disarmament, demobilization and reintegration programmes, prevention of illegal exploitation and trafficking of natural resources and high-value commodities, and emphasizes the potential role of the African Union and sub-regional organizations in addressing the issue of the illicit trade in small arms and light weapons in all its aspects."

A/RES/60/180 (2006):98 **The Peacebuilding Commission.** "Recognizing the need for a dedicated institutional mechanism to address the special needs of countries emerging from conflict towards recovery, reintegration and reconstruction and to assist them in laying the foundation for sustainable development […] Decides, acting concurrently with the Security Council, in accordance with Articles 7, 22 and 29 of the Charter of the United Nations, with a view to operationalizing the decision by the 2005 World Summit, to establish the Peacebuilding Commission as an intergovernmental advisory body […] Also decides that the following shall be the main purposes of the Commission: (a) To bring together all relevant actors to marshal resources and to advise on and propose integrated strategies for post-conflict peacebuilding and recovery; (b) To focus attention on the reconstruction and institution-building efforts necessary for recovery from conflict and to support the development of integrated strategies in

order to lay the foundation for sustainable development; (c) To provide recommendations and information to improve the coordination of all relevant actors within and outside the United Nations, to develop best practices, to help to ensure predictable financing for early recovery activities and to extend the period of attention given by the international community to post-conflict recovery […] Reaffirms its request to the Secretary-General to establish, within the Secretariat, from within existing resources, a small peacebuilding support office staffed by qualified experts to assist and support the Commission, and recognizes in that regard that such support could include gathering and analysing information relating to the availability of financial resources, relevant United Nations in-country planning activities, progress towards meeting short- and medium-term recovery goals and best practices with respect to cross-cutting peacebuilding issues."

A/RES/59/213 (2005):99 **Cooperation between the United Nations and the African Union.** "Calls upon the United Nations system to intensify its efforts, in collaboration with the African Union, in combating illegal exploitation of natural resources, particularly in conflict areas, in accordance with relevant resolutions and decisions of the United Nations and the African Union."

A/RES/57/337 (2003):100 **Prevention of armed conflict.** "Recognizes the need for mainstreaming and coordinating the prevention of armed conflict throughout the United Nations system, and calls upon all its relevant organs, organizations and bodies to consider, in accordance with their respective mandates, how they could best include a conflict prevention perspective in their activities, where appropriate […] Calls for strengthening the capacity of the United Nations in order to carry out more effectively its responsibilities for the prevention of armed conflict, including relevant peacebuilding and development activities, and requests the Secretary-General to submit a detailed review of the capacity of the United Nations system in the context of the report on the implementation of the present resolution."

A/RES/57/253 (2003):101 **World Summit on Sustainable Development:** "Reaffirming the need to ensure a balance between economic development, social development and environmental protection as interdependent and mutually reinforcing pillars of sustainable development […] Reaffirming also that poverty eradication, changing unsustainable patterns of production and consumption, and protecting and managing the natural resource base of economic and social development are overarching objectives of, and essential requirements for, sustainable development […] Recognizing that good governance within each country and at the international level is essential for sustainable development."

A/RES/53/242 (1999):102 **Report of the Secretary-General on environment and human settlements.** "Reaffirms that, in accordance with its mandate, the United Nations Environment Programme should not become involved in conflict identification, prevention or resolution." (Note: In the context of the other mandates of UNEP, this reference is understood to mean "not *directly* involved." Where environment and natural resource issues are being addressed, however, UNEP can upon request provide technical expertise and support to Member States and the wider UN system involved in conflict identification, prevention or resolution.)

A/RES/47/37 (1993):103 **Protection of the environment in times of armed conflict.** "Recognizing that the use of certain means and methods of warfare may have dire effects on the environment, recognizing also the importance of the provisions of international law applicable to the protection of the environment in times of armed conflict […], [the General Assembly] Urges States to take all measures to ensure compliance with the existing international law applicable to the protection of the environment in times of armed conflict; […] to take steps to incorporate the provisions of international law applicable to the protection of the environment into their military manuals and to ensure that they are effectively disseminated; Requests the Secretary-General to invite the International Committee of the Red Cross to report on activities undertaken by the Committee and other relevant bodies with regard to the protection of the environment in times of armed conflict."

A/CONF.151/26 (1992):104 **Report of the UN Conference on Environment and Development. Annex 1. Rio Declaration on Environment and Development.** Principle 24: "Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary." Principle 25: "Peace, development and environmental protection are interdependent and

indivisible." Principle 26: "States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations."

Resolution 3435 (XXX) (1975):105 **United Nations Environment Programme.** "The General Assembly, Recalling recommendations 24, 36, 37, 74, 85 and 102 of the Action Plan for the Human Environment […], Recognizes that the development of certain developing countries has been impeded by the material remnants of […] wars […]; Requests the Governing Council of the United Nations Environment Programme to undertake a study of the problem of the materials remnants of war, particularly mines, and their impacts on the environment." 4. Decisions of the UNEP Governing Council

23/1/I (2005):106 **Bali Strategic Plan for Technology Support and Capacity-Building.** "Requests the Executive Director to give high priority to the effective and immediate implementation of the Bali Strategic Plan for Technology Support and Capacity-Building; including: […] (xiv) Environmental emergency preparedness and response […] (xvii) Post-conflict assessment […] Work must be coordinated, linked with efforts already in progress and integrated with other sustainable development initiatives using existing coordinating mechanisms, such as the Environmental Management Group, the United Nations Development Group and the resident coordinator system."

23/11 (2005):107 **Gender equality in the field of the environment.** "Further requests the Executive Director to give an account of lessons learned about gender-related aspects of environmental issues in conflict situations and to apply its conclusions to the post-conflict assessment work of the United Nations Environment Programme."

22/1/IV (2005):108 **Post-conflict environmental assessments.** "Commends the role that the United Nations Environment Programme has played in undertaking post-conflict assessments, including its role in promoting clean-up of environmental hotspots, in supporting the environmental activities of Governments in post-conflict situations, in raising awareness of conflict-related environmental risks, and in integrating post-conflict environmental activities as part of the United Nations humanitarian assistance and part of the reconstruction efforts to countries and regions […] Requests the Executive Director to further strengthen the ability of the United Nations Environment Programme to assess environmental impacts in post-conflict situations […] Requests the Executive Director to make the necessary arrangements in order to enable the United Nations Environment Programme to conduct post-conflict environmental assessment at the request of the concerned State or States to be assessed as well as to report to the relevant United Nations bodies and commissions for further follow-up."

Climate Change and International Protection

Sari Sirva

1. Introduction

Climate change is moving into the core of international political discussion due to its rapid progress and the scientific reports, most importantly the fourth report of the Intergovernmental Panel on Climate Change[1]. The states are also moving on in the legislative level with the attempt to sign a successor agreement to Kyoto Protocol in Copenhagen in December 2009.

Pursuant to the First Assessment Report of the IPCC (1990) "the greatest single impact of climate change might be human displacement." According to the Panel's estimates, by 2050, 150 million people could be displaced by climate-change-related phenomenon such as desertification, water scarcity and flood and storms. More recent studies, such as the Stern Review from 2006 estimate the number of displaced to be over 200 million.[2] According to estimates, the greatest number of displacement will be internal displacement.

The numbers are alarming but it should be noted that climate change-induced displacement is already taking place. According to Professor Norman Myers of Oxford University in 1995, 25 million "environmental refugees" were displaced. According to his calculation, 4 million of them were displaced in the Horn of Africa.[3]

The scope of the paper does not extend to discussing the complex phenomena behind migration, be it forced or voluntary. Suffice it here to quote the UN Office of High Commissioner of Human Rights to list four main climate-related displacement scenarios:

"* weather-related disasters. such as hurricanes and flooding

- gradual environmental deterioration and slow onset disasters, such as desertification, sinking of coastal zones and possible total submersion of low-lying islands
- Increased disaster risks resulting in relocation of people from high-risk zones
- Social upheaval and violence attributable to climate change-related factors:"[4]

1 ICCP AR4, International Panel on Climate Change 2007:Synthesis Report (November 2007)

2 Stern Review on the Economics of Climate Change, 2006, available at http://www.hm-treasury.gov.uk/sternreview_index.htm

3 Myers, Norman (2001)Environmental Refugees: A Growing Phenomenon of the 21st Century, Philosophical Transactions of the Royal Society.

4 Report of the Office of the United Nations High Commissioner for Human Rights on the relationship between climate change and human rights. A/HRC/10/61, 15 January 2009, paragraph 56.

Given the regional scope of the Conference it should also be mentioned that large parts of the Horn of Africa region belong to the vulnerable ecosystems defined by the Rio de Janeiro's Environmental and Development Conferences Agenda 21 Plan of Action. Such vulnerable ecosystems are deserts, semiarid lands, marshlands, mountains, small islands and certain coastal regions.[5]

There are also studies on linkages between climate change, interacting with economic, social and political problems, and the high risk of violence in 46 countries.[6] These countries are inhabited by 2.7 billion people and are mainly in sub-Saharan Africa, Asia and Latin America. These countries are also seriously exposed to negative impacts of climate change.

International protection is applicable, by definition, only to persons who have crossed international borders and are, thus outside their countries of origin or habitual residence. The paper at hand excludes, therefore, from its discussion internally displaced persons for whom other international protection mechanisms apply and who legally benefit from the protection of their own States.

The magnitude and the seriousness of the problem of climate change-induced forced migration and the predicament these people face and will be facing places new challenges to the existing international protection regime. It has also been proposed that entirely new international agreements be drafted in order to alleviate the sufferings of the present and future needy.

With the short background to the projected climate change predicaments my paper attempts to

- analyse the linkage between climate change and human rights
- analyse the present 1951 Geneva Convention Related to the Status of Refugees and its possible response to the climate change –induced displacement
- analyse subsidiary forms of protection

2. Climate Change and the Links to Human Rights

Climate change has already affected the lives of millions. Establishing the link between climate change and human rights has not long been in the agenda: scholars like Carl Söderbergh argue that, even if there is nothing new about the linkage between human rights and climate change, there has been a long silence on the matter while the focus has been more on the scientific study of the climate change.[7] He, further, argues that the silence has now been alleviated. In April 2008, the UN Human Rights Council passed resolution 7/23, introduced by the Government of Maldives

5 Agenda 21, paragraph 12.1, available at http://www.un.org/esa/sustdev/documents/agenda21enslish/agenda21toc.htm

6 International Alert and Swedish International Development Cooperation Agency (SIDA), A Climate Conflict, 2008, p.7).

7 Söderbergh Carl (2009), visiting scholar in the Lund University. Human Rights in a Warmer World: The Case of Climate Change Displacement, p. 1-2.

that instructed the UN Office of the High Commissioner for Human Rights to conduct a study on human rights and climate change. The study was published as a report and was presented to the tenth session of the Human Rights Council, in March 2009. The study has yielded to some international human rights organisations and governmental bodies briefings.

As a historical overview on the relationship between human rights and climate change, the UNOHCHR makes a reference to the principle 1 of the 1971 Declaration of the United Nations Conference of the Human Environment (the Stockholm Declaration) which states that there is a "fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permit a life of dignity and well-being." However, the declaration is not legally binding and the report makes a point that the universal human rights treaties do not recognize or refer to a specific right to a safe and healthy environment. Nevertheless, the UN treaty bodies "all recognize the intrinsic link between the environment and the realization of a range of human rights, such as the right to life, to health, to food to water and to housing."[8]

After establishing the link between human rights and environment the UNOHCHR makes a list on effect of the climate change to specific rights. The following is an overview of the list, bearing in mind their relevance to international protection regime:

1. *The right to life* as protected under the International Covenant on Civil and Political Rights and the Convention on the Rights of a Child[9]. This right has been described by the Human Rights Committee as the "supreme right", "basic to all human rights" and it is a right states cannot derogate from. More importantly, the Committee has noted that it imposes an obligation to States to take positive measures for its protection.[10]
2. *The right to self-determination* which is a fundamental principle in international law. Common article 1, paragraph 1 of the International Covenant on Economic, Social and Cultural Rights and the International Covenant on Civil and Political Rights state that "all peoples have the right of self-determination" by virtue of which "they freely determine their political status and freely pursue their economic, social and cultural development." Pursuant to the Human Rights Committee, "important aspects of the right to self-determination include the right not to be deprived of its own means of subsistence and the obligation of a State Party to promote the realization of the right to self-determination."[11]
3. *The right to adequate food.*
4. *The right to water*
5. *The right to health*

8 UNOHCHR, A/HCR/10/61, paragraphs 17 and 18.

9 International Covenant on Civil and Political Rights, art.6; Convention on the Rights of the Child, art. 6

10 UNOHCHR, A/HCR/10/61, paragraph 21.

11 Human Rights Committee, general comment No.12 (1984) on art. 1 (Right to self-determination) para.6

Apart from the listed civil, political, economic, social and cultural rights the report mentions specific groups that are particularly vulnerable:

1. *Women.* The report states that "women are specially exposed to climate change-related risks due to existing gender discrimination, inequality and inhibiting gender roles. It is established that women, particularly elderly women and girls, are affected more severely and are more at risk during all phases of weather-related disasters."[12]
2. *Children.* According to studies, climate change will exacerbate existing health risks and undermine support structures that protect children from harm.[13] Furthermore, the children in the developing world will primarily bear the health burden of climate change.[14]
3. *Indigenous peoples.* Pursuant to the study mentioned in UNOHCHR´s report, climate change poses a serious threat to the life and lifestyles of indigenous people whose living environment often is in marginal lands and part of fragile ecosystems.[15]

For the effected people it is not enough to recognise the linkage between climate change and human rights. A rightful question will follow: will I get redress if my rights are violated. The UNOHCHR makes a flat statement on the second step forward to establish a causal link between human rights violations and climate change. The report states that "while climate change has obvious implications for the enjoyment of human rights, it is less obvious whether, and to what extent, such effects can be qualified as human rights violations in a strict legal sense."[16] The report argues that it is difficult to establish a causal link between the violator and the violated due to the following reasons:

- it is difficult, due to the historic greenhouse gas emissions to point out a particular country with a specific responsibility
- global warming is often one of the several contributing factors to climate change-related effects
- adverse effects of global warming are projections about future events while human rights violations are established after the harm has occurred[17]

There has, however, been international litigation, such as the Inuit Circumpolar Council's submission in 2005 to the Inter-American Commission on Human Rights. In the case, the Inuit petition identified the United States as the offending party.

12 UNOHCHR, A/HCR/10/61, paragraph 45
13 UNICEF Innocenti Research Centre, Climate Change and Children: A Human Security Challenge, New York and Florence, 2008; UNICEF UK, Our Climate, Our Children, Our Responsibility: The Implications of Climate Change for the World´s Children, London 2008.
14 World Bank, Global Monitoring Report 2008 – MDGs and the Environment: Agenda for Inclusive and Sustainable Development, p. 211
15 M. Macchi and others, Indigenous and Traditional Peoples and Climate Change, International Union for Conservation of Nature, 2008.
16 UNOHCHR; A/HCR/10/61, paragraph 70.
17 ibid.

Whilst the right to a healthy environment has not been firmly established in international law, the Petition concluded that it is, nevertheless, "a right of customary law outside the context of indigenous peoples."[18] The Inter-American Commission concluded in December 2006 that the case would not be heard. It held, however, a thematic hearing on the Petition. The Commission argued during the hearing, i.e., how could one state be held responsible for the actions of many. The argument was replied by one of the counsels that each state should be held separately as well as jointly liable.[19]

The UNOHCHR focuses on its response to state obligations triggered by the climate change to national obligations. States are liable to take positive actions to ensure that within their jurisdiction individuals enjoy protection of their human rights. It goes one step further in making a reference to the state's obligations to protect individuals against foreseeable threats to human rights related to climate change. The European Court of Human Rights has found a violation of the right to life in a case where State authorities had failed to implement land-planning and emergency relief policies while they were aware of an increasing risk of a large-scale mudslide. The Court also noted that the population had not been adequately warned about the risk.[20] The State can, in other words, be held accountable for omission, not just acts.

As regards economic, social and cultural rights, the UNOHCRH report argues that while some of the treaty obligations may only be realised progressively over time and there may be additional strain caused by climate change- related events, States still have an obligation to ensure the widest possible enjoyment of these rights. Priority must be given to satisfying the core obligations and answering the needs of the most vulnerable.[21]

UNOHCHR reiterates in its report on obligations of international cooperation the identification of the Committee on Economic, Social and Cultural Rights has made on the States´ legal obligation. I will quote the relevant point to this paper:

- "Take steps though international assistance and cooperation, depending on the availability of resources, to facilitate fulfilment of human rights in other countries, including disaster relief, emergency assistance, and assistance to refugees and displaced persons[.]"[22]

Carl Söderbergh argues further in his analysis on state responsibility that one way further would be to adopt the common law notion of "due diligence." He points out that "during the past decade or so, UN human rights oversight mechanisms have adopted the common law notion of "due diligence" in order to create a more detailed content to many human rights, including to protect individuals from non-

18 Inuit Petition, p. 70.
19 ICHRP, p. 42
20 Budayeva and others v. Russia, European Court of Human Rights, No. 15339/02.
21 UNOHCHR, A/HCR/10/61, paragraph 77.
22 UNOHCHR A/HCR/10/61, paragraph 86.

state harm."[23] This way states can also be held responsible for failing to provide adequate protection such as was in the *Budayeva- case* mentioned earlier.

3. International Protection under the 1951 Geneva Convention Related to the Status of Refugees

There has been a heated debate on the separate concept of "environmental refugee" since 1980´s. It started on a serious basis since the publication of the classic definition of Essam El-Hinnawi who wrote in 1985 in his report to the UN Environmental Program (UNEP) that environmental refugees are

> "those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life."[24]

The definition is not legally binding and has been severely criticised. For example, Gaim Kibreab wrote in 1997 that "the term `environmental refugee` was, therefore invented to at least in part to depoliticise the causes of displacement, so enabling states to derogate their obligation to provide asylum.[25]

UNHCR has also rejected the notion of `environmental refugee` and holds firmly to the view that the 1951 Geneva Convention Relating to the Status of Refugees does not protect those fleeing from climate change- induced events. UNHCR has stated in its comments to the UNOHCHR consultation process the following:

> "UNHCR has serious reservations with respect to the terminology and notion of environmental refugees or climate refugees. These terms have no basis in international refugee law. Furthermore, the majority of those who are commonly described as environmental refugees have not crossed an international border. Use of this terminology could potentially undermine the international legal regime for the protection of refugees and create confusion regarding the link between climate change, environmental degradation and migration. While environmental factors can contribute to prompting cross-border movements, they are not grounds … for the grant of refugee status."[26]

UNHCR has, however, extended its good offices to assist victims of natural catastrophes on a case-by-case basis without any corresponding broadening neither of its mandate nor of state's obligations.

Carl Söderbergh argues that there is a real risk of *ad hoc* responses to the urgent and increasing need of those displaced on account of climate change. He argues that

23 Carl Söderbergh (2009), a visiting scholar in the Lund University, unpublished paper Human Rights in Warmer World: The Case of Climate Change Displacement, p. 21

24 Essam El.Hinnawi, UN Environmental Program, Environmental Refugees 4 (1985), p. 4

25 Gaim Kibreab (1997): Environmental Causes and Impact of refugee Movement: A Critique of the Current Debate. Disasters, 1997, 2 (1), p. 21

26 United Nations High Commissioner for refugees, Climate Change, Natural Disasters and Human Displacement: a UNHCR Perspective (23 October 2008), p. 7. (available on the UN Office of the High Commissioner for Human Rights website concerning the HCR 7/23 process).

the widening of the scope of application of the 1951 Geneva Convention should not be rejected off hand. Rather, its possibilities should be explored in order to avoid a situation of *ad hoc* solutions which was exactly what the drafters of the 1951 Convention intended to do. Rather, the 1951 Conveniont should be opened up to the human rights violations we see today. Bringing the 1951 Geneva Convention to the 21st century would also be in line with the interpretation of James Hathaway. He has argued that the Convention should be read in conjunction with the 1967 New York Protocol and hence, give protection to harms occurring anywhere any time.[27] The following analysis is based on the recent study of Carl Söderbergh who argues in favour of the inclusion of at least some categories of persons fleeing from climate change-induced events in the scope of application of the 1951 Geneva Convention.

As a basis for the analysis the legal definition of a refugee as laid down in Article 1(A)2 of the 1951 Geneva Convention reads as follows:

> "owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it."

The traditional refugee law paradigm takes as a starting point a person fleeing from harm caused by the government for reasons of his political opinion. This paradigm has, however, already been shifted into more inclusive interpretations by extending protection to gender-related persecution[28], domestic violence or victims of trafficking.

Carl Söderbergh analyses in his recent study how the different elements of the legal definition of a refugee could yield to protection of some categories of climate change displaced. He starts with the notion of *well-founded fear.* It is stated that persons fleeing from environmental reasons do not fear persecution. Söderbergh notes that the thinking of a state as an active persecutor focuses on the classical thinking of the state as the agent of persecution. However, the 1951 Geneva Convention talks also about inability to resort to the state's protection. Thus, a state can, by omitting to fulfil its protection obligations cause a person to fear persecution.[29]

The second step in the legal definition of a refugee is the notion *persecution.* Many scholars, including James Hathaway, argue, that persecutory acts usually involve violations of core human rights, such as the right to life, freedom from torture and personal liberty and core civil and political rights: " [..] persecution may be defined as the sustained or systemic violation of basic human rights […][30]

Söderbergh argues that persecution is not universally defined. The UNHCR Handbook on Procedures and Criteria for Determining Refugee Status accepts that violations of rights that would not, *per se,* amount to persecution, may , `if taken

27 James Hathaway (2003): A conference statement in Helsinki, unpublished, November 2003.
28 UNHCR`s Executive Committee, Conclusion No. 39
29 Carl Söderbergh (2009), p. 34
30 James Hathaway (1991): The Law of Refugee Status. Butterworths. Toronto, Vancouver, p. 104-105.

together produce an effect on the mind of the applicant that can reasonably justify a claim to well-founded fear of persecution on "cumulative grounds"`.[31]Also discrimination may, when reaching a critical level, amount to persecution.

Although persecution is, by many, typically focused, as we can see in Hathaway's definition, on civil and political rights, under the cumulative effect also violations of economic, social and cultural rights can lead to a well founded fear of persecution. As described earlier, the climate change will effect many core economic, social and cultural rights. Söderbergh mentions individual's right to health, food and adequate housing. If the violation of these rights singly or in total reach the level of such intensity that it is virtually impossible for him or her to return, it is reasonable to talk about the well-founded fear of persecution.[32]

The critical step of the definition is the *for reasons of* – notion. This entails the thinking that the persecutory acts are caused by the intent of the state of the persecuting agent. In order to satisfy the refugee definition the persecution must be caused for reasons of race, religion, nationality, membership of a particular social group or political opinion. Söderbergh follows the thinking of Michelle Foster who focuses not on the intent of the persecutor but on the "predicament" interpretation. In stead of focusing on the intent to persecute by the persecuting agent, she sees the enumerated grounds of the Convention as reasons to explain why the asylum seeker is facing the predicament she is in.[33]Thus the five grounds would, rather, "become a marker of vulnerability, an explanation why the individual or group of asylum-seekers are facing harm in the country of origin".[34]

Finally, Söderbergh turns to the definition's element of asylum-seeker's inability or unwillingness to receive the protection of the country of origin. He argues that the 1951 Geneva Convention's notion of protection is quite traditional, including such sovereign acts as the issuance of passports. He argues that climate change can easily risk such forms of protection. As mentioned earlier, pursuant to SIDA´s study, 46 countries are in risk of armed conflict because of climate change. That would disrupt their socio-economic and administrative structures and thus prevent them from offering such protection as meant by the 1951 Convention drafters. Also the sinking islands may risk losing their whole territory which is the basis of any statehood.[35] As we have seen in the previous paragraph on the climate change, human rights and state obligations, states´ obligations should encompass more than the traditional legal protection.[36]When failing to offer such protection, a person is genuinely unable to receive protection from his own country and, thus, satisfies this particular criterion of the refugee definition.

31 Office of the United Nations High Commissioner for Refugees: Handbook on Procedures and Criteria for Determining Refugee Status under the 1951 Convention and the 1967 Protocol relating to the Status of Refugees. Geneva, September 1979, paragraph 53.
32 Carl Söderbergh (2009), p. 35.
33 Michelle Foster (2007): International Refugee law & Socio-Economic Rights: Refuge from Deprivation, p. 270 onwards
34 Carl Söderbergh (2009), p. 37.
35 ibid.
36 ibid.

As an example of his interpretation of the 1951 Geneva Convention and climate change- induced refugees Söderbergh draws on a hypothetical case that might be reality in the future. He mentions
groups of Inuits in northeastern Russia who are forced to leave their region on account of permafrost melting and the thinning of ice-sheet which would destroy their livelihood and traditional way of life, including housing. They are moving to the United States in order to find a place where they can retain something of their traditional culture. Söderbergh argues that the Inuits are not leaving because of state action but because of Russian state's inaction, in other words on account of the omission by the state. Given that Russia is, according to the SIDA- report, one of the countries that risk climate change-induced political instability, it is possible it cannot meet its protection obligations. Thus, the Inuit's would be able to show they were unable to turn to their authorities for protection. Next, the Inuit's would not be targeted as a particular group of the state persecution but their predicament would mark their vulnerability. If they are searching a new place to salvage their traditional culture, they could fall under the grounds of race/religion. Finally, they would have to show they have no internal flight alternative. As Söderbergh argues, "internal flight alternative should be applied with due regard to the needs, circumstances and possibilities available to the individual asylum-seeker. If the Inuit's were forced to relinquish their culture by being internally relocated, that would violate their right to their own culture and other basic economic, cultural and social rights.[37]

As argued before, the inclusion of climate change-induced displaced are not covered by the present UNHCR doctrine by the 1951 Convention. Söderbergh argues that an inclusive interpretation should not be rejected off-hand. The alternative would be risking return to a situation prevailing prior to the 1951 Geneva Convention: *ad hoc* responses and a weak protection to the millions of needy.

There has also been discussion on new international instruments on protecting those who are displaced by climate change. There have been advocates for an additional protocol to the United Nations Framework Convention on Climate Change existing parallel to the 1951 Convention. Söderbergh is sceptical about such an arrangement and warns that "such parallel regime risks keeping populations thus protected outside the scope of UN human rights treaty structure and their various monitoring mechanisms." He mentions as an example of one malfunctioning parallel system Palestinians accorded refugee status under the mandate of UN Relief and Works Agency that does not fit well with other parallel refugee contructs.[38]

The Principle of Non-Refoulement and Protection under Other Instruments

International human rights law and, indeed, customary international law, include a protection mechanism and protection possibility also under the principle of *non*

37 Carl Söderbergh, p. 41
38 ibid. p. 46

refoulement. The principle is laid down most clearly in article 33 of the 1951 Geneva Convention which states that "No Contracting State shall expel or return ("*refouler")* a refugee in any manner whatsoever to the frontiers of territories where his life or freedom would be threatened on account of race, religion, nationality, membership of a particular social group or political opinion." The same principle has been interpreted to be included in article 7 of the UN Covenant on Civil and Political Rights and article 3 of the European Convention on Human Rights which both prohibit torture and inhuman, cruel and degrading treatment. Their treaty monitoring bodies have interpreted the prohibition to cover also such situations where a person is to be sent back to a country where he may face such treatment. The European Court of Human Rights gave its landmark case *Soering v.United Kingdom* in 1989.[39]The Court ruled that article 3 of the European Convention on Human Rights prohibits a state to expel a person to circumstances where he is in serious danger of being tortured or treated inhumanly or degradingly. The Court has in other cases, such as *Chahal v. United Kingdom*, *Ahmed v. Austria* and *Jabari v. Turkey* stated that the protection granted under article 3 of the European Convention on Human Rights is wider than that under article 33 of the 1951 Geneva Convention.[40]

The European Court of Human Rights has been in its decision-making rather conservative and held a high threshold for violations of article 3 and the principle of *non refoulement*. It has demanded a relatively high degree of severity of the treatment in order for it to qualify as torture or inhuman or degrading treatment. In many cases, such as the *Chahal- case* and the *Jabari-case*, the case has evolved around a failed asylum seeker who is facing illegal deprivation of liberty, stoning to death, torture or assault to physical integrity. The rights have basically touched upon the core civil and political rights.

There have, however, been a case where the European Court of Human Rights has ruled on a return to a situation where access to health care is seriously inadequate and thus can amount to degrading treatment. In the case *D. v. United Kingdom* the applicant was dying of AIDS and risked being sent back to St. Kitts where at that time there were no or limited supplies of necessary medicines.[41]The Court has, however, after that case rejected a series of health-issue cases and noted that the circumstances in the *D- case* were exceptional.[42]

The European Court of Human Rights and the Committee of Human Rights under the additional protocol of the UN Covenant on Civil and Political Rights have in their decisions shaped and elaborated the principle of *non refoulement.* It is interesting at this point to note that the UN Covenant on Economic, Social and Cultural Rights has recently been supplemented by an additional protocol allowing for individual complain mechanism. As Carl Söderbergh argues, there might be a possibility for the UN Committee on Economic, Social and Cultural Rights to apply *non refoulement* to cases where people are returning to regions where there economic,

39 Case of Soering v. United Kingdom (7.7.1989), paragraph 88.

40 Case of Chahal v. United Kingdom (15.11.1996), paragraph 80, Case of Ahmed v. Austria (17.12.1996), Case of Jabari v. Turkey (11.7.2000).

41 Case D. v. United Kingdom (No. 146/1996/767/964, 1997).

42 See Case of N. v, United Kingdom (Appl. NO. 26565/05, 2008)

social and cultural rights at serious risk.[43] In cases where one would be forced to return to countries seriously affected by climate change, this legal venue would be one option to receive protection.

Apart from the 1951 Geneva Convention there are also regional refugee convention and protection mechanisms. In the context of the present Conference it is worth discussing shortly the 1969 Convention regarding the specific aspects of refugee problems in Africa ("The OAU Convention"). It uses, basically, the 1951 Geneva Convention refugee definition and then adds a supplemental Article 1(2):

> "[…] shall apply to every person who, owing to external aggression, occupation, foreign domination or events seriously disturbing public order in either part or the whole of his country of origin or nationality, is compelled to leave his place of habitual residence in order to seek refuge in another place outside his country of origin or nationality."

The OAU Convention gives a possibility to extend protection from individually assessed protection need to also situations where, e.g., climate change-induced predicaments cause events seriously disturbing public order. These situations could be, for instance, natural catastrophes or armed conflicts caused by climate change.

The European Union has within its Common European Asylum System adopted a directive that has a bearing on protection needs that fall outside the scope of the 1951 Geneva Convention. Council's directive on the minimum standards for qualification as a refugee or beneficiary of subsidiary protection is based on the 1951 Geneva Convention and the *non refoulement-* principle of the customary international law. It, however, mentions nothing about granting protection to the climate change displaced persons. Article 15 that stipulates the conditions for receiving subsidiary protection reads as follows:

"Serious harm consists of:

(a) death penalty or execution; or
(b) torture or inhuman or degrading treatment or punishment of an applicant in the country of origin; or
(c) serious and individual threat to a civilian's life or person by reason of discriminate violence in situation of international or internal armed conflict."[44]

Discussions during the second phase of building and implementing the Common European Asylum System have not raised in a serious manner the inclusion of climate change displacement under the protection of the EU regime. Given the current anti-migration attitudes and political climate in Europe it is not very likely that EU countries are willing to accept new protection duties willingly.

43 Carl Söderbergh (2009), p. 43.
44 Council Directive 2004/83/EC of 29 April 2004 on minimum standards for the qualification and status of third country nationals or stateless persons as refugees or as persons who otherwise need international protection and the content of the protection granted, Article 15.

4. Conclusive Remarks

If the projected climate change takes place and the number of displaced persons rises to the estimated 200 million by 2050 we are facing a situation where durable and workable protection solutions are urgently needed. As discussed in the paper, as early as in 1995, there are already 25 million persons displaced due to the climate change. What is particularly alarming is that the displacement will hurt most the developing world which is also suffering the most from the climate change. As early warning mechanisms have been discussed in a lengthy manner, it is high time that the world community takes the needs of the displaced seriously before the situation becomes too complex and large to manage. International human rights law and refugee law must be able to respond adequately and in a timely manner to the new challenges posed by the 21st century and the climate change.

Council Directive 2004/83/EC of 29 April 2004 on minimum standards for the qualification and status of third country nationals or stateless persons as refugees or as persons who otherwise need international protection and the content of the protection granted, Article 15.

The Role of the Environment in Darfur Lasting Peace

Ahmed Abdelshafi Toba

Abstract

Jabel Marra Mountain and highlands (3, 000 m high in the Western Region of Darfur in Sudan) is linked to Lake Chad ecosystem (Jabel Marra and Lake Chad = JAMALAC) through several seasonal rivers (Azum, Kaja, Barey, Aribu and their tributaries) originating in Sudan. Settled farmers in Jabel Marra make up to 80% of the half million population which crop 2,000 square kilometers of land mainly in the alluvial wadi (Seasonal rivers) system fed from the western slopes of Jabel Marra. Desertification and loss of wildlife in the JAMALAC area has been identified as the major cause of conflict between nomads and settled farmers which has led to a region-wide war and millions being displaced in Sudan and Chad, making it one of the most serious international crises of the century. Restoring the environment for resettling of the displaced has therefore become the main element of peace making and hope for better livelihood.

Key words: JAMALAC, Desertification, farmers and nomads, peace

A. Background

1. Jabel Marra mountain and highlands (3, 000 m high in the Western Region of Darfur in Sudan) is linked to Lake Chad ecosystem (Jabel Marra and Lake Chad = JAMALAC) through several seasonal rivers (Azum, Kaja, Barey, Aribu and their tributaries) originating in Sudan. Most of these rivers intercept within the natural border demarcation in villages such as Magarowra and Marisa where they form small seasonal lakes too. Rainfall is from May to October and it ranges from 400 to 600 mm but rises to 800 mm in the Jabel Marra Mountains. Agricultural activities are concentrated along the seasonal rivers and tributaries and are mainly producing cash crops such as cotton, millet, sorghum, beans, sesame and groundnut as well as growing fruits like mango, guava, apples, banana, oranges, papaya and pineapples.

2. Settled farmers in Jabel Marra make up to 80% of the half million population which crop 2,000 square kilometers of land mainly in the alluvial wadi (seasonal rivers) system fed from the western slopes of Jabel Marra. Volcanic soils in the southern area of the mountain are productive but elsewhere, along the wadi system towards the frontiers with Chad, nomadic people use less fertile basement complex soils mainly for grazing of cattle, sheep, goats and camels. The connectivity between Jabel Marra and Lake Chad can also be defined in terms of livestock movement along these seasonal rivers creating a socio-economic corridor for the two countries. Despite the importance of these in supporting both local population and supplying water to the Lake Chad Basin, riparian communities in adjoining countries, the Jabel Marra is presently under threat of desertification.

3. There is a need to introduce factors that help the removal of barriers to remedial and sustainable land resources management. It is therefore important to consider a corridor-long remedial action in order not to establish a high potential benefit on one side of the borders and low on the other. Such potential will produce a driving force and eventually a huge momentum of livestock flux to be focused on one side and accelerate depletion of natural resources. This has created conflicts between nomads and settled farmers and led to a war of the century that has resulted in undesired social imbalance.

B. Types of Desertification in Darfur

Desertification and loss in wildlife in the JAMALAC area can be summarized as the following:

B.1 *Desertification by deforestation*: Loss of woodland for fuel demand is a major issue of the JAMALAC ecosystem since the rate at which wood is cut for fuel greatly exceeds the natural regeneration on the plains, and while some reserves exist on the upland massif, these resources will soon be exhausted. Already, people travel up to 10 kilometers to collect fuel wood. Considerable attempts have been undertaken by communities to supply fuel wood around villages, by planting fuel wood lots, but more effort is needed, particularly through massive plantations of indigenous plants. The spread of shifting cultivation onto more marginal lands in all areas with concomitant destruction of woodland is receding despite local orders prohibiting tree felling.

B.2 *Desertification by over-cultivation*: Due to the necessity of increasing subsistence cropping and the desire to increase cash crops, the shortening of fallows in the rotation cycles especially on the highlands and also on a range of flat and marginal sloping lands on the basement complex pediplains, has led to zones of localized desertification. The small mechanized farms, introduced in pilot scale trials, were poorly managed and soon abandoned as soils became exhausted. The rapid regeneration of woodland on these areas suggests, however, that the natural fertility of the

soils could be sustainably exploited with proper management techniques. On some sandy areas the losses of woodland is linked to the spread of cultivation and leads in some areas to remobilization of sand sheets. Major efforts are needed to contain these areas through extension and ameliorative inputs: the land will continue to be used by settlers and nomads for their own purposes.

B.3 *Desertification by over-grazing*: Overgrazing is a major problem in the area of JAMALAC, and certain zones are heavily used by livestock which has led to pulverized soils and complete degradation of the vegetation. These include stock roots, areas around villages and towns, around water holes and on a number of undulating pediplain areas where annual grasses have replaced perennials and the lands are exhausted or grassed out early in the dry season. This last type is a sort of seasonal land degradation since the land will have a grass cover again during the rains and may be unrecognizable from the previous situation.

B.4 *Desertification by unskilled irrigation*: Abandonment of lands from water logging and salinity is not likely to be a problem in the JAMALAC, but it may cause some concern - mismanagement of the resources could lead to more widespread abandonment of lands than is now taking place. Although there is some abandonment of cropland, the lands have a cover of grasses and shrubs. It is important to distinguish between localized problems of land degradation and a more regional problem of aridification, which may be caused by climate change as well.

B.5 *Wildlife fauna*: Large mammals in the Jabel Marra area have been depleted over many decades by hunting and changes in the Savannah woodlands from droughts and desertification (loss of habitat). The last major survey was carried out during the dry and wet seasons of 1976 by low level aerial counting techniques. A number of sightings were made during the course of the study and these were compared with the listing given by other studies. Although there appeared to have been reductions in the large mammals, the occurrence of mammals is widespread. Small mammals and reptiles are common throughout the area. There is some hunting in the southern parts of Jabel Marra area, reported to be migrants from Chad and Central African Republic and some complaints were filed against hunting by poisons.

The Jabel Marra area is significant in terms of bird migrations as it is a complex meeting zone for the palaearctic species coming southward from Europe, the African Rains Migrants that travel northward from Southern Africa following the rains, and of the residents remaining in the area all year. There are also regular visitors from West and East Africa. The most populated period is September, when palaearctic species are arriving from Europe and the Southern African species are about to follow the rain southward. A new survey could be suggested to update this data. In general, the ecosystem is undergoing visible changes due to desertification, land degradation and pressure on the limited resources from internal and transboundary migration of displaced people within Chad and Sudan along these tributaries. Massive woodland vegetation on the cultivated lands of Jabel Marra has long been reduced. Species are able to remain indefinitely only where special programs of plantation exist.

C. History of Linkage to National Priorities, Action Plans and Programmes

The Government of Sudan has approved the National Comprehensive Strategy (NCS) in 1991 through a parliamentary debate, and it entered into force for ten subsequent years until the end of 2002. NCS is the main government document for which sectoral strategies were elaborated after a wide consultation process. In the chapter of Natural Resources Management, page 191 Para 1, it has been stated that "*natural resources constitute the main wealth for the nation and it should be properly conserved and protected from desertification; and there is a need to channel more investment projects, increase environmental awareness of the local communities and maximize public-private partnerships. NCS calls for strict enforcement of laws that aim at protecting the natural resources and the environment*". For conservation of dry land biodiversity and sustainable land use, NCS builds on four main axes:-

- Soil conditioning and land maintenance south of latitude 14Ñ and land reclamation northward.
- Production of renewable natural resources maps and maps of investment projects.
- Plan for water use in rural areas.
- Intensive research activities related to land use, maintenance and reclamation.

In the area of Biodiversity and green land cover, NCS mentioned plans to "*introduce plantation of trees to simultaneously integrate agricultural and forestry cycle by 25% in the irrigated land schemes and by 10% in traditional rain fed agricultural schemes. Important biodiversity elements and issues of flora, fauna and wildlife will be addressed jointly with neighbouring countries where need is identified and deemed necessary*".

During the implementation of the Jabel Marra Rural Development project (1980-1992), the Government has formulated a land use plan to restore the balance between man and nature. Crop farming, grazing and forest use regulations were produced and enacting them was envisaged through conservation by-laws with local community participation. The government commitment to the project benefited rural development issues such as road rehabilitation, privatisation schemes, strengthening farmers' groups, introduction of animal traction, application of cost recovery systems and support to small-scale agro-processing. With increased competition on the limited natural resource base and subsequent desertification and drought cycles, the project benefits have gradually faded. As a result of this, government priorities have now shifted to combating desertification in the Jabel Marra area in order to widen environmental conservation and reduce pressure on the green potential and fertile land. On the other hand the Government decided to increase the present levels of production of grain by six fold, production of oil-bearing seeds by five fold and other diversified crops such as medicinal and aromatic crops by two fold. At country level, the Government has also established several Agricultural Colleges and Research

Institutes in support of the above ambitious plan and the University of Zalengi in Jabel Marra is a product of the government priorities in this regard. The University was established and made fully operational in 1991 with major agricultural research activities in crop science, plant protection, horticulture, animal production, agricultural engineering and rural economics. The University has an investment unit that commercialises the results of research and technical adaptations mainly in edible oil, rural sugar production, bricks and briquetting and introduction and adaptation of new plant species.

The University of Zalengi in the Jabel Marra mountain area has received support from the UNI to carry out a preliminary agronomy investigation for the adaptability of the local Jatropha seeds as well as seeds brought from Chad, Mali, Niger and Senegal. A workshop organized in cooperation with the German NGO supported by DAAD, operating in Kutum area where they had identified Jatropha plants and provided seeds to the University, was held in Khartoum in January 2002 and the preliminary results of the research were found extremely encouraging. The workshop was attended by representatives of Jabel Marra authorities who presented a paper entitled "Jabel Marra, the Past and the Future". Special emphasis was given to the role they expect to play during the implementation of the project. The NGOs were represented by Community Development Association (CDA), which are committed to socio-economic issues in the project and are already cooperating with the University in topics related to gender, youth and micro-projects.

D. Linkages to Global Environmental Conventions

D.1 The Global Environment Facility (GEF) Operational Program on Integrated Ecosystem Management OP#12 requires a comprehensive and cross-sectoral approach to addressing many of the goals of global environmental conventions and to the generation of multiple benefits. It facilitates inter-sectoral and participatory approaches to natural resource management planning and implementation on an ecosystem scale. OP#12 also facilitates prioritization and strategic sequencing of needed policy reforms, investments and other interventions. This approach is consistent with the *three* major Rio conventions on environment and development, and grouping *six* GEF Operational Programmes as well.

D.2 *Linkage to CBD OP#1, OP#4 and OP#13*: At the Second Conference of the Parties of the Convention on Biological Diversity (CBD), the state parties "reaffirmed that conservation and sustainable use of biological diversity and its components should be addressed in a holistic manner, taking into account the three levels of biodiversity and fully considering socioeconomic and cultural factors. However, the ecosystem approach should be the primary framework." -*Convention on Biological Diversity Decision 11/8.*

Article 10 of UNCBD: Sustainable Use of Components of Biological Diversity states that: "Each contracting Party shall as far as possible and as appropriate:

a) Integrate consideration of the conservation and *sustainable use* of biological resources into national decision-making.
b) Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced."

OP#1: Arid and Semi-Arid Zone Ecosystems;
OP#4: Mountain Ecosystems;
OP#13: Conservation and Sustainable Use of Biological Diversity Important to Agriculture.

D.3 *Linkage to UNFCCC OP#6*: The importance of social and economic factors is echoed in the United Nations Framework Convention on Climate Change (UNFCCC) which emphasizes, among others, the need to have comprehensive policies and measures to address issues related to the sources, sinks, and reservoirs of greenhouse gases, taking into account different Socioeconomic contexts-*United Nations Framework Convention on Climate Change, Article 4, para. 3.*

OP# 6: Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs.

D.4 *Linkage to International Waters OP#9*: The long-term objective of the programme is to achieve global environmental benefits through international water projects which integrate the sound use of land and water resource management strategies as a result of changes in sectoral policies and activities that promote sustainable development.

OP#9: Integrated Land and Water Multiple Focal Area Operational Program.

D.5 *Linkage to UNCCD OP#12*: Finally, the United Nations Convention to Combat Desertification (CCD) notes that actions to combat desertification (or land degradation in arid, semi-arid, and dry sub-humid areas) should be undertaken within the framework of an integrated approach that can contribute to sustainable development- *United Nations Convention to Combat Desertification, Article 2, para. 1. Article 2 of the UNCCD Convention sets the following objective:*

⇒ The objective of this Convention is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international cooperation and partnership arrangements, in the framework of an integrated approach which is consistent with Agenda 21, with a view to contributing to the achievement of sustainable development in affected areas.

⇒ Achieving this objective will involve long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level.

Article 7 of the UNCCD Convention underscoring the priority to affected African country Parties and considering the particular situation prevailing in this region, the Parties shall *pay special attention to the implementation of article 21 in Africa.*

D.6 The Multi-focal Area Operational Program # 12 is aimed at catalyzing widespread adoption of comprehensive ecosystem management interventions that integrate ecological, economic, and social goals to achieve multiple and cross-cutting local, national, and global benefits. These benefits may include two or more of the following:

(a) Conservation and sustainable use of biological diversity, as well as equitable sharing of benefits arising from biodiversity use;
(b) Reduction of net emissions and increased storage of greenhouse gases in terrestrial and aquatic ecosystems;
(c) Conservation and sustainable use of water bodies, watersheds, river basins and coastal zones.

OP#12: Integrated Ecosystem Management.

E. Environmental Future Threats to the Existing Conflict Situation

E.1 Increasingly, Chad and Sudan have become aware of some of the environmental threats to their shared trans-boundary natural resources and associated socio-economic issues. These threats may be anticipated to include:

a) increasing competition over natural resources, their impacts on abundance and distribution of animal stocks, resulting difficulties for local pastoral wealth management, and negative social, economic and environmental consequences;

b) significant trans-boundary movement of humans and their wealth, reduced control on human health and related diseases and high pressure on the environmental resources;

c) long-term ecosystem shifts, associated with climate variability, that impact live stocks upon availability of land suitable for cropping and pasture;

d) the need to improve the local capacity to assess, monitor and manage the ecosystem from a national and/or regional multicultural, integrated perspective;

e) the need to enhance the regional ecosystem for more sustainable management of the JAMALAC rich living and seasonal resources;

f) loss of biodiversity due to overuse of land forest natural resources, which has already threatened or endangered wild life, savannah species and some seasonal birds;

E.2 The ecosystem degradation and desertification described above is exacerbating poverty and hunger in the West Darfur region in Sudan and the northeastern region of Chad. This project will not seek to address all root causes of the ecosystem degra-

dation but rather introduce an industrial approach to reverse the degradation trend, reducing poverty and promoting food security. This will be achieved through the introduction of sustainable industrial ecosystem management of Jabel Marra mountain resources. This will have trans-boundary environmental implications and can only be successfully addressed by combining JAMALAC wide actions with country level environmental initiatives. While various informal and formal discussions have taken place between parties in both countries during the development of this proposal, there is currently no established mechanism for consultation and co-ordination between them in order to deal with multi-sectoral issues associated with the JAMALAC zone.

G. Possible Roles for Environmental Solutions

G.1 The main objective of approach to the solution is to initiate an ***environmental peace project*** focusing on the use an industrial approach to enhance regional efforts addressing critical ecosystem problems related to desertification as a major cause of conflict in the region. This objective will be achieved through the use of the available indigenous knowledge of various species of domestic plants that are found growing along the seasonal rivers connecting Jabel Marra Mountain with Lake Chad (JAMALAC). Identification of beneficial uses and the transformation of those into a wide range of raw material for the industry will enable introduction of massive plantations that would drive the economy of the region into a stable pattern. This would on one hand become a major and sustainable input factor in combating desertification through an industrial approach, and on the other hand it would promote peace and security in the sub-region on a wider scale.
G.2 The project will particularly assist in the development of, and catalyze the implementation of a sub-regional project using indigenous resources to ensure a transboundary industrial approach to sustainable management of land resources. This will include activities such as:

⇒ the development of appropriate frameworks and mechanisms at both sub-regional and national levels for consultation, co-ordination and cooperation in the management of JAMALAC;

⇒ introduce the industrial approach model, in 10 communities in each country, to combat desertification through the exploitation of the available indigenous knowledge of plants and species in the JAMALAC zone;

⇒ the development of institutional capacities of the key local developmental and research agencies and institutions in the region that will contribute to the implementation of the integrated industrial approach to ensure sustainable management of the JAMALAC;

⇒ the establishment of effective ecosystem monitoring through plantation zones to protect the ecosystem together with mechanisms for identification and analysis of socio-economic prob-

lems and community related issues; and quantification of the role of planting local species through the JAMALAC project as a sink of CO2 and Jabel Marra mountain as a monitoring/early-warning site for global climate change;

⇒ joint research activities between the two countries to increase understanding of the ecosystem connectivity issues embedded in JAMALAC, as a whole one system, through development of underutilized species and their transformation to industrial products, functioning of the ecosystem and the factors which affect it (biophysical, social, economic and political);

⇒ the harmonization of country policies and legislation relating to ecosystem development activities affecting the measures to introduce plant species in small communities to sustain food security schemes, improve industrial integration and enrich biological diversity in JAMALAC to help combating desertification;

⇒ increased external support to minimize and mitigate the negative impacts of JAMALAC infrastructure development (urbanization, tourism development, resource exploitation) through the promotion of sustainable land and water use and management approaches and the use of tools such as Environmental Impact Analysis;

⇒ Donors' consultation and Conference held to support the environmental peace project.

H. Conclusion

H.1 The environmental peace project is a possibly viable and sustainable approach to the peace process in Darfur, which should include mechanisms to strengthen system-wide trans-boundary monitoring and assessment, planning and management co-ordination mechanisms.

H.2 Specific actions to maximize benefits from the industrial approach are based on the indigenous plant knowledge in specific zones and corridors that create conflicts between the nomads and the settled farmers in Darfur.

H.3 In order to increase the global environmental value of the project and the region of JAMALAC as a whole, there could be an international ecosystem management through an industrial approach; an important resource for regional food security; a reservoir of biological diversity; and an indicator of global climate change.

References

1 Reports of the United Nations projects in Darfur.
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3 GEF web site on global environment Conventions.

Environmental Degradation in the Greater Horn of Africa:
Some Impacts and Future Implications

Kidane Mengisteab

Introduction

The Horn of Africa has faced an alarming rate of environmental degradation, which has produced famines, massive economic and social dislocations, and widespread resource-based conflicts. Over the last half a century the region's temperature has shown an rising trend while rainfall has had a decreasing trend (Ouma, 2008). During the same time period large parts of the region, which are arid or semi-arid, have faced rapid rates of degradation, in the form of deforestation, loss of vegetation and biodiversity, increased soil erosion, desiccation, and desertification. While the causes for the worsening degradation may not be fully understood, they relate to global climatic changes and various types of local human activities. The actual effects and potential implications of the growing rates of degradation are also hard to map out accurately. There is little doubt that they pose a growing threat to human security in the region, however.

This short paper has four objectives. The first attempts to examine the most important local human activities that have contributed to the region's environmental degradation. The second part examines some of the massive socioeconomic dislocations, including social conflicts that have resulted from the environmental degradation. The third part attempts to shed light on the future potential implications, if the countries of the region fail to contain the worsening degradation process. The concluding part briefly explores the factors that are likely to hinder the region's ability to contain the pending environmental crisis by linking the region's environmental crisis with its broader socioeconomic conditions.

1. Factors for Environmental Degradation

As noted above, the Horn of Africa's environmental crisis is attributable to two broad factors. One relates to global climatic changes, which have affected many regions of

the world, albeit differently. The second relates to regional human activities that lead to changes in land-use and land-cover. While there is much debate about the factors that cause global climatic changes, there is little doubt that human activities are major culprits. Global deforestation is related to the increase in the emission of carbon dioxide to the atmosphere. Changes in land-use and land-cover are important drivers of water, soil, and air pollution. Vegetation removal by land clearing and harvesting of trees leaves soils vulnerable to erosion. Mining and industrial emissions are also major contributors to global warming through emission of various greenhouse gases to the atmosphere. The destruction of the ozone layer by the emission of ozone-depleting substances, including chlorofluorocarbons (CFCs) and nitrous oxide is said to be a major factor in global climatic changes. Agricultural chemicals, including herbicides and pesticides, are also contaminants of water and soil and pose health risks to humans and animals. Dumping toxic waste in the high seas, which perhaps constitutes the cruelest human activity, has also been a factor of degradation.

The Horn of Africa is one of the regions of the world, which has been most seriously affected by the adverse impacts of global climatic changes, although the region is an insignificant player in the production of the industrial emissions that generate global warming. The attention of this paper, however, is on the role of regional human factors. A range of human activities have contributed to the degradation of the region's environment. Among them is the rapid population growth that has occurred over the last half a century. The region's population has more than doubled since the early 1960s. As a result, notable changes have taken place in the rate, extent, and intensity of land-use and land-cover. More land is cleared for agriculture and more trees are cut for construction and firewood. Another regional factor that has contributed to the environmental degradation is the resilience of the peasant and pastoral modes of production. Despite rapid growth in urbanization, the region still hosts the largest clusters of pastoralists in the world. With growing population and increasing size of livestock and longer and more frequent droughts, overgrazing and shortages of quality pasture have become serious problems in many parts of the region.

Declining standards of living and declining adherence to traditional conservation measures are other factors. Many of the communities in the Horn of Africa, such as the Borona of southern Ethiopia, the Meru and the Mijikenda of central and coastal Kenya respectively, had a strong culture of environmental conservation. With downward pressure on their standard of living, however, their traditional conservation measures are increasingly undermined. Marginal and more vulnerable land is increasingly brought under cultivation and grazing, due to growing land constraint. It is also rather common for peasants and nomads to engage in cutting of trees to sell wood and charcoal in order to earn a living, even though such activities are viewed as undignified, if not socially taboo in much of the region.

Land-Takings by the State: Another factor that has exacerbated the degradation of the region's environment is appropriation of communal lands by the state. Oblivious to the land constraint and land-based communal conflicts their populations face, governments in the region have increasingly engaged in awarding land concessions to foreign investors extinguishing the traditional land rights of their

citizens. The governments of the region have been giving land concessions to corporations in extractive industries for decades. In recent years, however, they have also engaged in awarding land to foreign investors in large scale commercial farming.

Growing food markets in the land or water-deficit in Middle Eastern and Asian countries, rising global food prices, and a growing demand for bio-fuels are some of the factors that have stimulated investments in farmlands in the region, as in many other parts of Africa. Middle Eastern countries, including Saudi Arabia, the United Arab Emirates, Qatar, and Kuwait, along with China, South Korea, and Egypt are among the newcomers investing in farmland in the Greater Horn region. Sudan and Ethiopia, in particular, have become major targets. Data on the magnitude of land concessions awarded to commercial farmers and on the fate of those stripped of their lands are not easy to assemble, partly because the transactions lack transparency and partly because the process of land-taking is still unfolding. Anecdotal data, however, suggest that land grabs and evictions of peasants and pastoralists are taking place at a rapid rate. The Sudan, for example, is said to have awarded over 1.5 million hectares of farmland to investors from Saudi Arabia, the United Arab Emirates, Qatar, Jordan, Kuwait, and Egypt (H.Knaup and J. von Mittelstaedt, 2009). Philipp Heilberg of New York has also claimed to have obtained 400, 000 hectares of farm land in Southern Sudan, even as hundreds of Nuer and Murle ethnic groups die in clashes often related to disputes over land and cattle raiding in the Jonglei area of the region (H.Knaup and J. von Mittelstaedt, 2009). Sudan is also said to be trying to find investors for an additional 900,000 hectares of arable land (J. Blas and A. England, 2008).

Investors from Saudi Arabia, Dubai, India, Italy, as well as Germany's Flora Eco-Power, and the United Kingdom's Sun Bio-fuels have also obtained considerable amount of farmland in Ethiopia. An Italian company has recently received 30,000 hectares in the Southern Nations, Nationalities and Peoples regional state, in addition to the 85, 000 hectares of land the company uses for rubber production in the same region. The country has recently awarded to investors some 250, 000 hectares in the Gambela and Benishangul and Gumuz areas. Even the President of Djibouti is said to have received 7000 hectares of land in Ethiopia (Genet Mersha, 2009). According to Ethiopia's Ministry of Mines and Energy, the country is said to have 23.3 million hectares of land suitable for the production of oil-rich jatropha. The same Ministry's study has also indicated that 700,000 hectares of land is available for sugarcane production. It remains to be seen how much, if any, of the identified land would eventually be awarded to foreign investors. A local newspaper (Daily Nation, September 15, 2009) has, however, reported that the Ethiopian government will grant 1.7 million hectares of arable land to foreign investors before the coming harvest season. The Director of the Agricultural Investment Support, a recently set up government agency, also reported that 1.6 million ha has been marked for investors (Genet Mersha, 2009).

Kenya is also said to have leased 40,000 hectares of the River Tana Delta to Qatar (Hartley, 2009). Pastoralists, who regard the land as communal and graze up to 60,000 cattle in the delta each dry season, are strongly opposed to the deal.

Dominion Farms, a U.S. agricultural producer, has also obtained some 3,600 hectares of land for 45 years in the Yala delta in western Kenya. The company is alleged to harass local farmers in order to take their lands (Knaup and von Mittelstaedt, 2009). President Museveni of Uganda is said to have declared that foreign investors should not be allocated huge chunks of land because such land should be owned by Ugandans. Yet, it is reported that Uganda has offered over 840,000 hectares of farmland, roughly 2.2% of the country's total land area, to Egypt to produce wheat and corn to feed its population (Butagira, 2008). Uganda has also given 18,000 acres to Bidco, a manufacturer of edible oils, to grow oil palms. A German agro-investor, NKG Tropical Management, was also given 2,500 acres. Uganda is also said to have leased 10,000 acres to around 300-400 Chinese farmers.

Concessions to Extractive Industries

The extractive industries sector is relatively small in the countries of the Horn of Africa. Yet the governments in the region have granted significant land concessions to foreign investors in the sector. Although the exact figures remain unknown, anecdotal evidence suggests that the concessions are significant enough to have an impact on the environment. The countries of the region, with the exception of Djibouti, whose mineral resources seem to be limited, have made efforts to expand their extractive industries. Somaliland, for example, has granted East African Mining corporation exclusive rights to explore all mineral deposits in its territory. Range Resources of Australia has also secured the rights to all mineral and fuel exploration in Puntland. Eritrea has also given concessions to a number of companies, including Nevsum Resources of Canada (the Bisha project), Sunridge (the Asmara project, which covers 1,100 square kilometers), and Sanu, with about 2,600 square kilometers in western Eritrea. Ethiopia has also given several concessions for oil explorations. Among them are Petronas Carigali Overseas Sdn. Bhd. of Malaysia has been given concession to explore for petroleum in the Gambella Basin. Afar Exploration LLC of the United States has also secured an agreement for petroleum exploration in Afar Regional State. AB of Sweden has secured a license to explore in the Ogaden. White Nile Limited of Great Britain has also been given rights to explore in the Gambella Basin (US Geological Survey, 2006).

Kenya's extractive industry is relatively small. Mineral exports account for only about 3% of the country's total exports. Kenya has, however, awarded exploration rights to several companies. Kansai Mining Corporation of Canada and Mid Migori Mining Company have explored for gold in the Migori district of Nyanza province. AfriOre Ltd. of Canada has also explored in the Siaya district of Nyanza and the Kakamega district of Western province. International Gold exploration AB of Sweden also has projects in Nyanza and Rift Valley provinces. In addition, the government of Kenya has awarded exploration rights to China's National Offshore Oil Company, which holds 28% of Kenya's petroleum exploration acreage.

Sudan is a major producer of oil in the region. Its oil is largely produced by joint ventures of China National Petroleum Corporation (40%), Petronas Carigali Overseas of Malaysia (30%) and ONGC Videsh of India (25%) and Sudan Petroleum Company (5%). The country is likely to award more concessions, including in Darfur and the Red Sea province. Uganda has also granted several concessions to mining companies. It has also given concessions to oil companies, including Heritage Oil Corporation of Canada and its joint-venture partner, Tullow Oil of the United Kingdom and Hardman Resources of Australia and Tullow, which operate in the surroundings of Lake Albert.

Despite the absence of accurate estimates, there is little doubt that considerable land is alienated from customary holders in the region. There is also little doubt that the expansion of extractive industries and commercial farming has contributed to environmental degradation both directly and indirectly. Both mining and commercial farming entail the clearing of land contributing to deforestation, decline in vegetation cover, soil erosion, desiccation and desertification. They also contribute to degradation of the environment by emitting various pollutants to the air, water and soil. Oil spills in Sudan have, for example, become major sources of water and soil pollution.

Land-takings have also contributed to the environmental degradation indirectly. They have exacerbated the land, pasture, and water constraints the peasants and nomads in the region face. Such constraints, of course, worsen the problems of overgrazing and over-farming. Since little compensation is given to those who are displaced, the land-takings also contribute to the problems of unemployment, underemployment, and declining standards of living of communities, which, in turn, resort to unsustainable use of land and forest resources.

2. Some Critical Impacts of the Environmental Degradation

The environmental degradation has already produced serious socioeconomic problems in the Horn of Africa region. Among the most conspicuous and serious impacts have been famines and food insecurity. With the rains becoming more erratic and droughts becoming more frequent and of longer duration, the Horn of Africa has suffered periodic famines. Ethiopia's 1974 and 1984 famines are the most devastating the region has witnessed in recent years. Beyond these large scale famines, however, pastoralist and peasant populations in the region regularly face famines and malnutrition, along with livestock starvation. The Ethiopian government, for instance, has recently appealed for urgent food aid to feed 6.2 million of its people. Another 7 million of the country's population are on government-run foreign-funded food-

for-work schemes (Reuters, October 24, 2009). Ethiopia is not alone since localized famines have become rather regular occurrences in every country of the region.

The region is also witnessing a growing number of climate refugees. Persistent droughts are forcing peasants and nomads to flock to cities or refugee camps to avoid starvation. The numbers of climate refugees and displacements are difficult to estimate since there are other factors that cause displacements. Climate-induced displacements have become a growing problem. U.N. officials, for example, estimate that about 10% of the nearly 300,000 refugees at the Dadaab refugee camp in northern Kenya are climate refugees (Edmund Sanders, October 25, 2009).

Water and Energy Crisis: With increasing frequency of droughts almost all of the countries in the region are facing growing water and power shortages that are producing serious economic disruptions not only in the peasant and pastoral sectors but also in other sectors of the economy. This past July, for example, newspapers in Kenya reported that Lake Kamnarok in Kenya's rift valley dried up (Standard, July 5, 2009). The death of the lake brought about the doom of wildlife including an estimated 10,000 crocodiles. Water points in Lake Nakuru National Park also dried up while Lake Naivasha shrank considerably. Nairobi's three reservoirs, including those at Ndakaini, Sasumua, and Mambasa were also dangerously low causing a water crisis in Nairobi. In addition, the critical power generating stations on the Tana River in Kenya had to be shut down due to a fall in its dam's water levels causing power shortages. Some factories had to shut down in Nakuru, including Flamingo Bottlers, Coil Product Kenya Limited and Kapi Limited, due to the water crisis.

During the same period Ethiopia also witnessed the death of Lake Haramaya in the Oromiya region. The country had also to engage in water and electricity rationing, due to low water levels of power generating dams. Shortage of water caused the rationing of power, which is likely to have affected the country's overall economy. Even gas stations in various parts of the country were either idle or operating in shifts, due to rationing of power. The water and energy crisis is not limited to Kenya and Ethiopia. Eritrea, Somalia, Sudan and even parts of Uganda have also faced serious drought problems. The dry river bed that cuts through Hargeisa, in Somaliland, gives no indication that the city of roughly 900,000 inhabitants once was blessed with a river flowing through it.

Soil Erosion, Decline of Productivity, and Extreme Poverty: Even when the rains come they have been of shorter duration. They have also been erratic, sporadic, and torrential, causing massive soil erosion. While top soil is said to be Ethiopia's largest export, all the other countries in the region face serious erosion problems. A combination of droughts when the rains fail and massive soil erosion when they come has, thus, subjected the inhabitants of the region to declining agricultural productivity and quality of pastures and has made their way of life increasingly more precarious.

Communal Conflicts: Another major problem associated with environmental degradation is communal conflicts. The relationship between environmental degradation and conflict is often disputed (Salehyan, 2008). The Horn of Africa, however, provides several cases of conflicts which are at least exacerbated if not entirely caused

by environmental degradation. There is little doubt, for instance, that the worsening environmental degradation has undermined the institutional mechanisms that govern access to land and water in the region. Incursions of pastoralists across customary communal and international boundaries in search of water and pasture have become common occurrences and have led to various clashes in the region. The gruesome conflict in Darfur clearly has links with dislocations brought about by environmental degradation, albeit largely indirectly. Water and land scarcity engendered by persistent droughts have undermined the traditional institutions that governed access to these vital resources by the different claimants, thereby creating conditions for conflicts. The periodic conflicts between the Borona and Guji and Borona and Somali populations in south-eastern Ethiopia are also, at least in part, caused by shortages of water and pasture exacerbated, if not triggered, by environmental conditions. Environmental degradation is also a factor in the conflicts between the Turkana, Pokot and Karamoja and those between Pian Karamojong and Bokora ethnic groups in Kenya and Uganda. Cattle rustling, due to depletion of stock by droughts, has also led to many inter-communal conflicts in the region, including those between the Lou-Nuer and Murle groups in the Jonglei of Southern Sudan.

At state level, water scarcity is beginning to build tensions among countries. Ethiopia and Kenya have, for example, faced tensions over the waters of Gilgel Gibe III hydroelectric dam, under construction by Ethiopia over a section of the Omo River that supplies water to Lake Turkana in northern Kenya. The concern on the part of Kenya is, of course, that the construction of the dam might lead to reduction of the volume of the water flowing to Lake Turkana. The water flow to Lake Turkana should not be affected significantly by the dam, provided that the dam is used for hydroelectric power generation only. The Nile countries have also, so far, failed to reach an agreement on how to share the Nile water.

Health Problems: The water and energy crisis has, of course, tremendous implications for the overall economy of the region. It also has serious implications for health. Cases of cholera are, for example, said to be rising in the region, due to sanitation problems.

Wildlife-Human Conflicts: Shortage of agricultural land and pasture is also a major threat to the co-existence of humans and wildlife as they have to compete for the same resources. The lucrative tourist industry in the region can be damaged if the wildlife habitat is not protected.

3. Future Potential Implications of Unmitigated Environmental Degradation

The more the environment is degraded the more unsustainable land use patterns become, as noted earlier. There is, thus, little reason to expect that the degradation

trend of the last half a century will not continue at an accelerated rate without sustained intervention by all stakeholders in the region, especially the states. If the trend is allowed to continue, the implications for human security in the region are likely to be grave. One potential implication is that the region can face mega droughts that lead to worsening poverty rates and widespread famines. More frequent occurrences of such conditions are, in turn, likely to bring about the end of the traditional subsistent farming and nomadic modes of production. These two economic systems, which currently employ over 70% of the region's population, would simply cease to be viable. The region will then face a rapid and large scale rural-urban migration. The states of the region under their existing economic systems are simply unlikely to be able to deal with such demographic movements. Huge rates of urban unemployment and urban congestion, along with poor health and educational services can make the region more unstable than it already is. All these problems are also likely to be exacerbated by lower growth rates, due to increasingly punishing temperatures. The region would also be likely lose some of its exports, including livestock and cash crops, which will contribute to a general economic crisis triggered by worsening water and energy shortages.

4. Can the Degradation Process Be Reversed?

As pointed out at the outset of the paper, the Horn of Africa's environmental degradation is attributable to global climatic changes and regional human activities. Reversing the global factors, even if possible, is beyond the region's control. Controlling the regional human activities, which contribute to the degradation by changing land-use and land cover-patters, are within the region's reach, however. It is also possible, at least theoretically, to reverse the degradation process since there are many policy options that can positively change land-use and land-cover patterns in the region. Development policy geared towards transforming the subsistent farmers and pastoralists can, for example, create non-farming jobs for those interested in moving to new occupations. This will relieve the land and pasture pressure currently faced by the populations in the most degraded areas and enable them to practice more sustainable resource-use measures. Land cover can also be gradually restored by controlling overgrazing and cutting of trees as well as through large-scale reforestation activities. Rural electrification is also likely to help reduce reliance on wood energy and the cutting of trees for fuel.

Reversing the degradation process is neither easy nor quick; nevertheless, policies such as those identified above can slowly begin to rehabilitate the environment. The restorative process, however, requires the political commitment by the states of the region to reorient their development strategy. It also requires their ability to co-ordinate the efforts of all stakeholders. Failure by a single country, especially one of the larger ones, such as Ethiopia, to implement the restorative policies can undermine

the efforts of all the rest, since the effects of environmental degradation cannot be confined to national boundaries. Whether the region's alarming degradation process is reversed or the region continues in its present trajectory will, thus, depend on the political will of the states of the region to reorient their development strategies and to coordinate their restorative measures.

Reasons for Pessimism

Given the prevailing political conditions in the region, however, one can hardly be optimistic that the region will rise to the challenge and take the urgently needed measures to reverse the degradation process. The environmental degradation is not the only crisis the Greater Horn has faced. As a matter of fact, the environmental crisis is one aspect of the general socioeconomic crisis that has ravaged the region. It is beyond the scope of this paper to discuss in detail the region's general socioeconomic conditions. However, it is essential to at least identify the various challenges in order to be able to gauge the region's ability to address the environmental challenges. Among the most critical problems that afflict all the countries of the region are; (1) a crisis of nation-building manifested by various ethnic and religious conflicts; (2) a crisis of state-building manifested by regimes that see politics as a zero-sum-game and are preoccupied with monopolizing power rather than developing institutions of good governance; (3) opposition groups that mostly aspire to trade places with those in power; (4) a general population that has not yet been able to organize and bring the state under its control; (5) regimes that are incapable of adopting development strategies that advance the interests of their populations; (6) regimes that easily become agents of external powers and interests in an effort to secure external support in extending their stay in power; and (7) regimes that are incapable of promoting meaningful regional cooperation, manifested by the various direct and proxy wars they wage against each other. Given these conditions, the region is unlikely to effectively address the environmental challenge. Sadly, it seems disaster-bound.

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PART II

Social Consequences of the Environmental Issues in the Horn of Africa

Devastation of the Somali Pastoral Way of Life and the Rise of Piracy

Fatima Jibrell

Outline

- History of the Somali Fishing Communities
- Effects of the Somali civil war on marine life
- Illegal unreported and unaccounted Fishing (IUU)
- Toxic and nuclear waste dumped into Somali national waters
- World Media and Somalia
- Emergence of Somali piracy
- Conclusion/Recommendations

Somalia has the longest coastline of Africa, which stretches from the Indian Ocean to the Red Sea. Due to the Somali coast marine resources and geographical location within The Horn of Africa, let us explore and look into accountability and responsibility with regards to the international community in sharing custodianship of these commonly owned oceans and seas. We need collectively to ponder, dwell on and answer questions concerning the international world marine garden, our seafood. How are we taking care of it? Are we sure that seafood poisoned and illegally collected is not on our dining tables?

History of the Somali Fishing Communities

The majority of Somali people are pastoralists who depend on livestock for their livelihoods. As an upheld choice for centuries, many of them did not turn to the sea for livelihoods; they enjoyed their vast arid landscape that offered them livestock pasture and the limited water points on the wadis in grasslands such as the Sool Plato and the Haud, where camels and herders thrived for centuries. Southern Somalia

also kept their livelihood activities, which were mostly based on herding and farming along the two rivers of Shabelle and Juba. However, the pastoral seasonal migration did not rely on the coast and fishery as a source of livelihood; pastoralists remained true to their liking of meat and milk as their primary food consumption even though limited pastoralists migrated and grazed livestock along the coasts seasonally. This cultural abandonment of the sea and marine resources was a blessing to the marine life for centuries leaving the Somali coastline ecosystems an un-disturbed paradise.

As internal displacement by civil war accelerated in 1991, jobs, business activities and the basic survival of individuals and families faced a dire challenge. In this regard, pastoral youth, internally displaced youth and business people joined forces to carry out both charcoal exportation and fishery exportation to Dubai.

Some Diaspora family members invested in buying fishing gear, including boats for their family members in Somalia in order to create reliable income. Boats and other equipment were bought from Yemen and from Mogadishu, which had the supplies left by the fallen Somali Government, as well as materials originally looted from displaced or killed people, leaving their assets to the warlords and looters in Mogadishu.

After the charcoal business deteriorated due to the extreme consumption (over-exploitation) of acacia trees used for charcoal, male youth moved from charcoal activities to fishery, causing a sharp increase in the fishing population. This has induced many Somali youth to venture out to fishery as an alternative form of income generation, which would prove viable. It is common to see coastal villages where fishermen are selling their catch either to exporters or to the white tuna canning industry in Laas Qoray, while fish handlers disdain their seafood catch for consumption in favor of eating meat. They believe that fishing is a means to an end for job creation and wealth making rather than consumption. Therefore, it is difficult for these youths to accept foreign fishing vessels that destroy their wealth. In effect, waste dumping at sea by foreign nations is seen as a war waged against their livelihoods for existence.

Effects of the Somali Civil War on Marine Life

Illegal *Unreported and Unaccounted for,* Fishing Resources in Somalia's Waters

Illegal fishing by foreign companies in Somalia aggressively multiplied with the state collapse caused by the ongoing civil war. During the early stages of the illegal fishing, the Somali fishermen who are also on the increase due to exploration and desperate experimentation of job creation, tried to chase illegal fishing fleets from their shores. However, some fishermen have been hosed with boiling water, their equipment and boats destroyed by illegal fishing companies. The fighting intensified. Somali fisher-

men fought back and began to use guns. The illegal international fishing vessels concealed their vessels' identity and bribed Somali militia bosses for letters of permission (so called licenses for Fishing rights) to fish, complicating matters further. Eventually, the illegally fishing vessels hired some young Somali militia men, brought on board by their Somali militia bosses and used them to keep the Somali fishermen at bay.

International researcher and consultant on Somalia marine resources, Waldo Abshir testified, January 2009: *It is estimated that about $450 million dollars worth of illegal fish is taken out of Somalia per year. This is more than the EU gives to Somalia in aid packages. This is money that could have been used toward developing Somalia and benefiting its population. Since illegal vessels that are fishing in Somalia are owned by the EU and Asia, the international community should be involved with the Somali people in finding solutions for these problems*

Illegal fishing companies are not only taking fish from Somalia's waters, but also they are destroying the eco-system by using illegal and devastating harvesting techniques such as metal nets, banned equipment and chemicals in order to get the biggest catch in the shortest time possible. Therefore, halting the extinction of our common food and natural marine resource in Somali waters is an important cause to bring us together and should encourage humanity to strive and sustain our common heritage and resource.

Toxic waste dumping in Somali waters

Bashiir M. Hussein, a Somali academic who did research on these issues in the past, wrote in 1997: The Italian government commissioned a special parliamentary committee (*commissione parlamentare d'inchiesta sul ciclo dei rifiuti)* to investigate, among other things, the illegal trans-boundary toxic waste traffic and related criminalities. In the year 2000, the same commission headed by Honorable Massimo Scaglia of the Italian Green Party (*Verdi Italiani*) came up with a report according to which Somalia has been for quite long time and continues to be the preferred destination of all kinds of toxic wastes[1].

In another report[2] published in the year 2000, Mr. Mohamed states that the Italian forces in Somalia during the UNISOM (1993 - 1995) were ordered to wear uniforms specially designed for nuclear-infected environments. This kind of order has been given to the Italian forces stationed in South Somalia at least twice during their peace mission to Somalia. The damage caused by hazardous waste to the Somali populations has been neither prioritized nor mentioned in the reports.

Locations indicated by Mohamed as contaminated with nuclear waste in Somalia are:
By the highway between Garrowe and Bossaso
By the beach on Bossaso coast
Hafun district

1 The report could be accessed at the following link: http://www.somalitalk.com/sun/170.html
2 See http://www.somalitalk.com/sun/4.html

Hobiya district
Mareeg Village and its area
Jawhar District
Mogdishio beaches
Bardalle of Baidoa district
Merka
Jamame
Barava

Another form of toxic waste is derived from ballast, which is a type of material consisting of chemical and human waste that is disposed of by ships along the Somali coast, 'Bab Al Mandeb Gateway' within the Gulf of Aden. This is in order to avoid paying expensive service charges at specific sanitarily developed spots in international ports. Because of the narrow waterways between Aden and Somalia, toxic human and chemical waste comes to the Somali beaches, where it becomes a danger to children who are not kept away from swimming. Marine life, like turtles, comes to shore covered with an oily and glue-like substance; thus various marine species lie dead along the beaches.

World Media and Somalia

Information on cultural and environmental devastation in Somalia has never been a priority to international leaders nor to the world media that reflect their views. Thus, the toxic waste that is killing Somalis and the environment seems to be of no importance at all to the world of nations as long as the waterways are free of Somali piracy. The international media is missing the whole point about what is happening to the marine and coastal environment in Somalia by focusing on piracy only, which is one piece of the whole. The international leaders and the media have failed to understand how piracy developed in Somalia, linked to illegal fishing, dumping of toxic waste, and lack of economic alternatives for the Somali youth, whose lives have been destroyed by the ongoing civil war, negligence and unfairness of the international focus on world issues.

However there are some few exceptions of concerned journalists such as Johann Hari[3], a freelancer who has written for *The Independent* (London) and the *Huffington Post* (USA). Hari clearly expresses distaste in finding the most powerful nations on the planet bullying, harassing and cornering the weak and powerless Somali fishermen and their communities into submission. Attacking the Somalis for piracy further diverts attention from the struggle to fight for appropriate utilization and conservation of their marine resources.

3 See the link at: http://www.independent.co.uk/opinion/commentators/johann-hari/johann-hari-you-are-being-lied-to-about-pirates-1225817.html

An episode on Aljazeera television's program called *People and Power* with the title *The Toxic Truth,* which was aired on 17th January 2009, showed a documentary on the well-known Italian journalist Ms. Ilaria Alpi and her colleague Miran Hrovatin who were both killed in 1994 in Mogadishu, the capital of Somalia, while investigating illegal toxic waste dumping in Somalia (the Italian news paper *Corriere Della Sera* described this as a premeditated, double murder). The investigation of this crime is still unresolved in Italy and more so in Somalia, which does not have the capacity to do so.

Emergence of Piracy among Somali Pastoral Youth

Somali pirates started off as an offshoot of rage and helplessness felt by the Somali fishing communities who have seen their livelihoods destroyed and resorted to making money from the pillaging of oil tankers and tourist liners. These young men realized the amount of money being made from Somali marine resources by these illegal companies and decided to engage in piracy to make big profits for themselves.

Currently, Somali piracy has evolved to include pastoral youths who have always depended on livestock but now are involved in the lucrative business of piracy. The poverty-ravaged and mostly illiterate pastoral male youths are ready sources for hire, whether they are working in the illegal charcoal production, in piracy on the high seas or being used by the local warlords. These youths are usually armed and know how to shoot, have no education or access to employment, and come with few urban skills. Prior to piracy activities, they had caused extreme environmental degradation through deforestation and forest burning for charcoal in Somalia. The pastoral male youth for hire burned forests turning it into charcoal for exportation to Dubai, giving away and compromising their fragile landscape of ancient acacia forests, which is the base of the pastoral grasslands and watersheds.

These youths have now turned to piracy as a source of income. As a result, they have perpetuated a cycle of insecurity inside Somalia with no end in sight. Somali piracy has become an economic sector driven by well-armed male youth, equipped and trained in warfare. They have created for themselves and the youth whom they attract a lot of hard currency in their hands in the midst of extremely poor and hopeless youth and their families. Piracy remains an attractive and respected pursuit of income within their extended families as pastoral and rural families face repetitive drought. A number of young women of an age to marry are even considering and wishing to be married to a young man in this new economy based on piracy.

Who is to blame for the creation of piracy in Somalia?

Should blame lie with the international community which allows the plunder of Somalia's marine resources or these Somali locals who attempt to make a profit for themselves by the most inhuman methods or both?

Conclusion

The UN Security Council has drafted various resolutions aimed at stopping piracy in Somali waters. Two in particular, UN Resolutions 1816 and 1838 were drafted concerning the security of Somali waters[4]. However, security for whom?

These two resolutions miss the following points:

- Firstly the difficulty in distinguishing between a local Somali fishing vessel and a pirate vessel. The fishing community is therefore at risk of losing their livelihoods due to fear of international naval forces, which are protecting international fleets, which includes those who engage in illegal fishing. Who escorts the local fishing vessels and offers protection to the community livelihoods?
- Secondly, there is no consideration or support against illegal fishing and the dumping of toxic waste along the Somali sea lanes and coastline.
- International media[5] attests that the UN Security Council has authorized states interested in protecting their ships using all necessary measures to pursue pirates on land and sea.
- Thirdly, these resolutions are expensive and unsustainable in the long run. A more viable solution to stop this piracy and general insecurity in Somalia would be to find local solutions, which promote development of livelihoods and employment skills for pastoral youths involved in piracy and youth whom the pirates mentor.

The underlying factors regarding the development of piracy in Somalia are not taken into account within the UN resolutions. Money that is spent monitoring Somali waters can be used to develop and improve Somalia's coastal regions. Aid to Somalia would do its best if mainly directed to coastal development, including human resource development, job creation and infrastructure - such as jetties, cooling systems, training centers for coastal guards and in marine resource conservation skills. Aid that tries to address the extreme poverty and lack of opportunities that is driving Somali male youth to extreme methods of illegal employment such as piracy could focus on developing appropriate mechanisms and choices towards livelihoods. This could empower the male youth.

4 http://www.un.org/Docs/sc/unsc_resolutions08.htm
5 http://www.washingtonpost.com/wp-dyn/content/article/2008/12/16/AR2008121602848.html

The first tentative steps have been taken by the international community to end piracy by acknowledging Europe's role in ignoring the factors leading to the development of piracy in Somalia. In the ACP-EU Joint Parliamentary Assembly in Prague (Czech Republic), a resolution was adopted on 9th April 2009, perhaps the first of its kind, that confirms and recognizes that a significant amount of illegal fishing and toxic waste dumping originates from EU countries, among others.[6] This resolution could be used as a forward-looking reference point in advocacy and lobby activities.

Somalia does not have an effective government that could police and protect its international waters and resources. The vulnerable new government established in 2008 does not prioritize or seem to understand how to prioritize the various dire needs of Somalia and its population. At this point in time, this government is only concerned with maintaining and perpetuating its own existence.

Support and recognition of the importance of the Somali coastal development and security should be a primary agenda for millions of Somalis who could make a decent living out of it. However, the new Somali government could learn from civil society institutions in Somalia if they are trained in listening and dialogue skills. This would ensure that they harness the brains that can create the beauty of collective empowerment for the creation of a Somalia that stands a better chance of moving forward together. Therefore, in this regard, there is a great need for dialogue between local coastal communities, TFG, donors, UNEP, Somali NGOs, sea transport traders and the international community in order to face this challenge.

6 Resolution ACP-EU/100.569/09/fin.

Breaking the Cycle of Violence:
Understanding the links between environment, migration and conflict in the Greater Horn of Africa

Thomas Lothar Weiss and Juan Daniel Reyes

Introduction

Over three hundred thousand innocent persons die each year due to the now unavoidable consequences of climate change.[1] Half a billion persons, usually from the worlds most impoverished and vulnerable populations are at extreme risk of falling victims of a threat that they did not necessarily create. "Climate change is here. It has a human face."[2] With these deeply meaningful words, the international community is calling for a greater understanding on the links between climate change, environmental degradation and human suffering.

The impact of a changing environment is visible in, among many other spheres, the ability of communities to secure sustainable livelihoods in their places of residence. Today, an estimated 26 million are considered as climate displaced people. Out of this number, close to 25 million are being displaced by gradual consequences of climate change. Sub-Saharan Africa, and in particular, the Sahel and the Horn of Africa bear witness to this silent, virtually unnoticed, human catastrophe.[3]

Migration, in its many forms, is unarguably linked to negative environmental trends. The mismanagement of natural resources, and in general climate change, have become inescapable and manifest push factors for involuntary, unplanned, and forced migratory phenomena. While a fundamental connection between migration and the environment has existed throughout history, this link has gained both in extent and complexity with the ever more present reality of climate change. Both gradual environmental change and extreme environmental events influence population movements.

Although extreme environmental catastrophes are more likely to result in abrupt mass displacements of people, gradual environmental change, including phenomena such as desertification, reduction of soil fertility, costal erosion, and the depletion of marine resources, also deeply impact existing livelihood patterns and may trigger different types of migration.[4]

1 Global Humanitarian Forum - GHF (2009) p. 1
2 GHF (2009) Back Cover
3 Hugo (2008) p. 23, GHF (2009) pp. 48-49, Spits (1978)
4 IOM (2009)

Furthermore, it must be noted that as environmental degradation is a root cause of migration, migration is as well a cause of environmental degradation. Unmanaged resettlement processes can accelerate the deterioration of new host environments. In particular, unplanned urbanization, as well as camps and temporary shelter locations, can produce strains to already vulnerable ecosystems.

An underlying dilemma in the complex relationship between migration and the environment is the fact that increased population pressures on weak environmental contexts often result in the unmanageable competition over scarce natural resources and the subsequent genesis of deadly resource-based conflicts. The Greater Horn of Africa and the Eastern Sahel have for decades experienced the harmful impact on peace and security that negative interactions between the environment and population movements can produce.

This paper will briefly discuss the complex cyclical interrelationship between environmental degradation, migration and conflict in the Greater Horn of Africa. It will certainly not present an absolute depiction of the problem, but will seek to elucidate on the rationality framing the link between environment, migration and conflict, and expose its gravity.

Finally, this paper will introduce the work that the International Organization for Migration (IOM) is carrying out to prevent and manage the strife of forced migration in the Horn of Africa. Through its work, the Organization ultimately seeks to support sustainable development processes and lasting peace in the region.

Migration and the Environment

Associating environmental cycles to human migratory patterns is not a contemporary effort. Throughout history, people have migrated and adapted their livelihood structures to changing, often seasonal, weather patterns.[5] Yet today, we are facing the accentuation of the phenomena of environmental degradation and climate change, and its previously unseen effects on human life. Deteriorating ecosystems are increasingly affecting the lives of millions of the world's most vulnerable populations, and will continue to do so at unprecedented rates.

One of such effects is the reality that environmental change is making people move; usually as a means of survival. "Stresses such as increased drought, water shortages and riverine and coastal flooding [….] affect many local and regional populations. This will lead in some cases to relocation within and between countries, exacerbating conflicts and imposing migration pressures."[6]

The Intergovernmental Panel for Climate Change (IPCC) predicted in the 1990's that the single greatest impact of climate change would be observed on human mi-

5 IOM (2009)
6 IPCC (2007)

gration.[7] Today, and as stated above, there is an estimated 26 million climate displaced persons. This number, according to some experts, could reach 200 million by 2050; a ten fold increase in less than half a century.[8] If this calculations would prove to be correct, in just four decades the number of climate displaced people would exceed the total number of migrants worldwide today (200 million[9]).

The African continent, and particularly sub-Saharan Africa, will eventually experience first hand some of the most dangerous consequences of climate change. Already vulnerable ecosystems, combined with increased population pressures, including considerable refugee and displaced populations, will be exacerbated as current patterns of environmental change continue. As average temperatures are expected to increase, and rainfall in low-mid latitudes expected to decrease, life in many parts of the continent will no longer be a viable option.[10] The principle livelihood systems of millions of person will be seriously affected by, for example, constant drought, unpredictable rainfall patterns, and floods. Particularly, rain-fed agriculture will be severely affected by climate change, and yields from this economic activity could fall by up to 50% by 2020.[11] In addition, land degradation is today a major concern to over 60% of African countries, while about "65% of the [continent's] cultivable lands have degraded due to erosion, and chemical and physical damage".[12]

As the coping capacities of communities dwindle in the midst of a changing environment or as a consequence of a single environmental disaster, people are forced to take the decision to migrate, usually irregularly, in search for survival.[13] People facing such circumstance can be referred to as environmentally-induced migrants or displaced persons. Due to the legal implications of the use of the term environmental (climate) refugee, such will be avoided throughout this paper.

Although one-off, sudden, environmental events such as hurricanes, glacial lake outburst floods, monsoons, and floods, result in hundreds of millions of environmentally induced migrants, the biggest threat to long-term human survival is that of climate processes and environmental degradation. Furthermore, and unlike the former, gradual environmental degradation usually takes effect silently and outside the view of those not directly affected; a phenomenon sometimes referred to as 'silent violence'.[14] Policy makers and practitioners have tended to ignore environmentally-induced migration unless it came into their vision full force, and under dramatic circumstances.[15]

The causal relationship between environmental degradation and migration is most often linked to a comprehensive deterioration of the livelihood systems of affected communities. Diminished access to, for example, water, arable land and raising grounds, affects the coping and income generation capacities of local persons,

7 Brown (2008) p. 11, Swing (2008) p.1
8 Myers (2005)
9 IOM (2008)
10 IOM (2009) p. 36
11 Brown (2008) pp. 16-17
12 Grote & Warner (2009) pp. 5-6, UNEP (2008)
13 IOM (2007) p. 3
14 Spits (1978), Hugo (2008) p. 23, IOM (2009) p. 35
15 Swing (2008) p. 1

and may induce their decision to migrate. Migration in this case is caused by the broader development-threatening processes caused by deteriorating ecosystems.[16]

Due to already significant levels of social vulnerabilities, poverty, and harshly arid ecosystems, the negative consequences of increased population pressures, compounded by environmental degradation, are more severely evidenced in the Sahel and the Horn of Africa.[17] The semi-arid belt separating Africa's arid north from more fertile areas in the south, and the easily flooded regions of the Equator, make Sudan, Ethiopia and Somalia particularly vulnerable to environmental change.

Recurrent drought in Ethiopia represents an evident example of the issues discussed above. The number of affected persons, its recurrent nature, and the probability of the phenomenon intensifying, is a major menace to the survival of millions of persons in the region. Drought is thought to be the greatest environmental stressor across Ethiopia and a major cause of rural-urban migration in both temporary-distress and permanent forms.[18] As seasonal rains continue to decrease, or change patterns, drought will continue to set in. Approximately 25 million persons particularly in Ethiopia's Somali, Afar, Oromia, and SNNPR regions are affected by this situation today.[19] In the SNNPR, this situation is of particular concern as an estimated 80% of the region's total population belongs to either pastoralist or agro-pastoralist communities.[20] Furthermore, this estimate may well increase due to the effects of climate change. As the World Bank foresees poverty levels in the country may well increase by 25% due to the variability of water resources; ultimately influencing the decision of vulnerable communities to migrate.

Considering Ethiopia's strong dependency on rain-fed agricultural production, the human and social consequences of climate change are of great concern to regional stability. Particularly, on-going clashes between pastoralist and farmer communities in the Ogaden and Oromia regions could spread to other parts of the country, and tensions between pastoralist border communities can extend to neighboring countries.

Conflict and the Environment

The casual relationship between conflict and the environment is reciprocal. Evidence shows that environmental factors can contribute to the development of violence, and that episodes of conflict and war have serious implications on the environment. In particular, the understanding that environmental degradation and climate change are contributing elements to conflict needs to be highlighted.

Increased pressures on weak environmental contexts have proven to fuel unmanageable competition for scarce natural resources and the subsequent genesis of of-

16 IOM (2009), Suhrke (1992) p. 5, Hugo (2008) pp. 22-23
17 GHF (2009) p. 49
18 Morrisey (2008) p. 1 (28)
19 OXFAM GB (2009); *SNNPR: Southern Nations, Nationalities, and People's Region*
20 Watkins & Fleisher (2002) p. 2 (329)

ten deadly resource-based conflicts – arguably the greatest threat to regional peace and stability in the Horn of Africa this century. Shortages of water, land, and other natural resources, in addition to growing populations, can lead to the accentuation of underlying social fault lines, and the deterioration of ethnic rivalries and political tensions that can themselves result in civil unrest and conflict.[21] Climate change often acts as a multiplier of trends, tensions, and instability that pose both political and security threats to global peace and security.[22]

"Since 1990, at least eighteen [extensive] violent conflicts have been fuelled by the [irregular] exploitation of natural resources. Looking back over the past sixty years, at least forty percent of all interstate conflicts can be associated with natural resources."[23] Of these, the ongoing conflicts in Sudan and Somalia are intimately associated with the competition and control of scarce resources such as fertile land and water.

When the demand for a certain resource, or set of resources, exceeds its supply, communities competing for its use may well resolve to the use of violence as a means to guarantee their economic interests and survival needs. This, combined with high rates of demographic growth, frequent natural disasters such as drought and flooding, and an inadequate national administration, makes the Greater Horn of Africa a region of extreme concern. As extreme circumstances most often than not lead to extreme measures, violence has now become a tool to access mean of survival.

The case of the conflict in Darfur, the Sudan, clearly demonstrates the linkages between environmental decay and conflict generation.[24] An increasing population, an almost permanent drought, and the absence of basic governance structures have led to the absolute collapse of the region's structural foundations of peace and livelihood. It is estimated that in the last six years a total of 300,000 persons have died for reasons directly related to the conflict, while a further two million have, and are still, suffering the tragedy of displacement.[25]

While sheer environmental factors do not explain the magnitude of the crisis, they do represent a core determinant in the development of the conditions that have led to, and sustained, the levels of violence and destruction experienced in Darfur. Water, land, and deteriorating weather patterns have all contributed to this catastrophe as they reinforce the conditions of poverty, marginalization, and absolute need that drive people into choosing conflict as a survival strategy.

Overgrazing and deforestation of a naturally arid ecosystem; the reduction of the quality of the land; a lack of vegetation that has allowed the advance of shifting desert sands; and a dry spell now lasting almost twenty years describe Darfur's present environmental context. "With higher population density and [a] growing demand for resources, recurring drought under conditions of near anarchy has fostered violent competition between agriculturalists, nomads, and pastoralists in a region where

21 UN (2004) p. 20, Swing (2008) p. 4, Environmental Law Institute – ELI (2009), IOM (2009) p. 40
22 EU (2008), UNEP (2009) p. 6
23 UNEP (2009) p. 8
24 Nilsson (2000) pp. 10-12, IOM (2009) p. 40
25 UNEP (2009) p. 9

some 75 percent of the population [is] directly dependent on natural resources for their livelihoods."[26]

As climate change will most probably tend to accentuate the environmental drivers of the conflict in Darfur, and of any other crisis in the Greater Horn of Africa, sustainable solutions to the region's most deep rooted livelihood problems – land and water – need to be addressed. Some of these issues will be discussed in the following sections of this paper.

Migration, Conflict, and the Environment

As has been exposed above, comprehensive relations exist between migratory and environmental factors, and between conflict and the environment. In addition, and evidenced by the example of the Darfur conflict, complex interrelationships between environmental degradation, migration and conflict in the Horn of Africa do exist, and must be understood. Human displacement caused by resource-based conflicts, and especially conflicts caused by environmentally-induced migration, are serious threats to human and regional security.[27] It has been found that "environmental degradation plays a role in migration, particularly in less developed countries, and that this migration, in turn, can be a factor in international and intrastate […] conflict."[28]

From a wider evidence-based perspective, *figure 1* presents the complex, often cyclical, correlation between migration, environmental degradation, and conflict. In simple terms, it is understood that each element in the model can be both a cause and an effect of another, and that the interrelationship between the three elements can be directed in any which way.

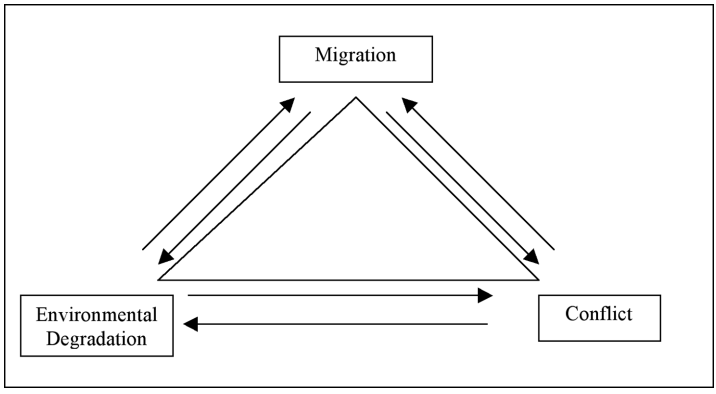

Figure 1: Interrelationships between Migration, Conflict and Environmental Degradation

26 UNEP (2009) p. 9
27 IOM (2007) p. 5
28 Reuveny (2005) p. 1

Although the Horn of Africa has to a certain degree witnessed the entire spectrum of possibilities associated to the relations between migration, environmental degradation, and conflict, most empirical and theoretical documentation in the field concentrates on the analysis of conflicts generating from environmentally-induced migration.

Unless adequate institutional structures are in place to manage the consequences of a depleting environment, local demand for scarce resources will tend to surpass the supply. Compounded by increasing demographic pressures, these complicated livelihood conditions will lead the displacement of communities and to the use of violence as an economic means of survival. This scenario is visible in less developed countries.

As communities are forced to migrate from unviable environments, the probability of conflict arising in the destination zones is likely to increase; particularly if these are also in a state of scarcity.[29] Scenarios where environmentally-induced migration may be a force in the generation of conflict can be defined on the lines of politics, scarcity, and ethnicity. Each of these factors, or any combination of the three are conditions that breed adversity, and in some circumstances violence.

Firstly, politics can be misused as a means to create rivalries between migrant and host communities, and exploit an already complex situations. For the most part, this can be observed in cases where environmentally-induced migration takes an international context, i.e. migrants cross an international boarder. In such cases, diverse and usually preexisting inter-governmental disputes can be translated into the local context of the new host community.[30] Cases in which displaced communities arrive in semi-autonomous or separatist regions usually tend to become politically volatile, and prone to episodes of violence.

Secondly, the arrival of individuals into a destination environment increases the density and the size of the population extracting an already limited supply of basic resources. As the basic scenario linking environmentally-induced migration and conflict, this argument supports the understanding that immigration increases the pressure on the use of economic and natural resources and leads to native-migrant competition. Furthermore, if the level of scarcity increases and a minimal structure of resource governance is absent, individuals might resort to the use of force in an attempt to subdue the competition.

Finally, when environmentally-induced migrants belong to a different ethnicity than those in the destination community, tension may arise. Particularly, mass movements of persons in a limited period of time will most likely produce a shock destabilization of the ethnic foundations of power and authority in the new host community - thus resulting in inter-communal tensions. In situations where ethnic rivalries precede a migratory episode, the probability of conflicts arising is considerably high.

As has been the case in the Greater Horn of Africa and in fact in many other regions in the world, conflicts that emerged from population movements includes

29 IOM (2009) p. 30

30 Adapted from Reuveny (2005) pp. 4-5, IOM (2007) p. 5

a combination of the scenarios presented above. Moreover, they tend to happen in development contexts marked by deep-rooted poverty, absent or weak administrative structures, and - more often than not - uncoordinated interventions from the international community. There is thus a need to, based on a clear understanding of local conditions, strengthen a policy framework capable of establishing sustainable development structures that break the cycle of violence that has emerged between the environment, migration, and conflict.

Policy Means and Measures

The international community, as well as individual governments, has in recent years placed extensive efforts in developing a series of coherent policy responses to the plight of resource-based conflicts. Various actors within the United Nations System, particularly the United Nations Development Programme (UNDP), and the United Nations Environmental Programme (UNEP), have sought not only to understand the links between the environment and conflict, but also to prevent the conditions that result in environmentally-induced conflicts, and in conflict-related environmental degradation.

The International Organization for Migration (IOM) as the global intergovernmental organization in the field of migration management is actively seeking to tackle the impact that migration is having on the environment, on conflict settings, and on the combination of both. As such, IOM has identified four fields of policy and action that will lead to the promotion of a positive interaction between migration, environmental change, and human security.

Migration and Development refers to the mobilization of the positive aspects of migration towards a country's sustainable development process. Within this understanding "the most cost effective and humane policy options involve obviating the need for environmental migration by intervening at the earliest stage [in order] to strengthen the coping capacity of the most vulnerable communities affected by environmental degradation"[31].

Community stabilization processes can be enhanced through the mobilization of human and financial resources – including remittances – available in the diaspora towards targeted initiatives that prevent further environmental degradation. For example, enhanced and environmentally sound agricultural practices developed abroad, can be introduced in the countries of origin by highly qualified professionals of the diaspora.

Facilitating Migration seeks to establish regular migration schemes that benefit migrants, countries of origin, and receiving countries alike. As such, it is understood that "bilateral agreements could be designed for the recruitment of set quotas of tem-

31 IOM (2007)

porary migrant workers from environmentally vulnerable communities"[32]. Although extremely difficult to put in practice due to the limitations in legal channels of international labour migration, such schemes could relief much pressure from communities struggling to secure any sort of livelihood.

The prevention of Forced Migration is an absolute priority in irreversible stages of environmental change. Unavoidable resettlement processes must be managed in a gradual and sustainable manner. In order to do so, improved preparedness mechanisms, including adequate early warning systems, must be developed. Furthermore, aid interventions must be coordinated with the affected communities, and must take into consideration issues of age, gender, and special needs in the migrating community, as well as carefully assessing the environmental impact of the resettlement process on the receiving destination.

Moreover, the return and reintegration of displaced communities to their regions of origin must be an available option in any resettlement process. If conditions allow, sustainable return schemes must be complemented by long-tem reconstruction and development programmes that will allow the sound reintegration of the returnees.

Regulating Migration refers to the establishment of adequate capacities to manage migration patterns - including episodes of environmentally-induced displacement – in a regulated manner. Capacity Building in Migration Management (CBMM) programmes are required to build official local capabilities in regulating migration, and in preventing illegal forms of migration which, most often than not, take place in situations of chaos. Particularly, the prevention of trafficking and smuggling in human beings must be a focus of such initiatives.

Finally, it must be highlighted that a precondition to achieving the objectives presented above is the development of effective and efficient methodologies to estimate migratory flows caused by climate change and other environmental factors. By understanding the scale of migration flows, local authorities and the international community will have the capacity to prepare adequate responses to complex humanitarian crises.

In an effort to contribute to this important objective, IOM published in 2008 the study: '*Climate Change and Migration: Improving Methodologies to Estimate Flows*', in order to define a multi-disciplinary methodological framework for the timely assessment of migratory flows caused by environmental factors.

IOM in the Greater Horn of Africa

The International Organization for Migration has for the past two decades built a comprehensive operational presence across the Greater Horn of Africa. Coordinated by the Mission with Regional Functions in Nairobi, Kenya, IOM field offices are active in Ethiopia, Somalia, the Sudan, Djibouti, and Uganda and implement activi-

32 IOM (2007)

ties in all policy areas related to migration, human security, and the environment, and focusing on supporting sustainable livelihood structures for the region's most vulnerable communities.

The Greater Horn of Africa, and in particular Ethiopia, Kenya, Somalia and the Sudan, present to IOM a multifaceted field of operations continuously affected by humanitarian emergencies. Looming food crises, poverty, and conflict in the region are contributing to the accentuation of vulnerabilities of affected communities and compels mixed migration flows throughout the area. The Ethiopia-Somalia-Yemen migratory route, the Kenyan boarders with Somalia, Ethiopia, Sudan and Uganda, South Sudan, and Darfur are examples of the difficult migration contexts in which IOM operations take place.

Particularly relevant in the context of this paper is the recently initiated programme: *Integrated response to food insecure vulnerable families in the rift valley and northern regions of Kenya*. Already affected by deteriorating weather patterns, and a considerable population of refugees from neighboring countries, local pastoralist and sedentary communities in Northern Kenya have been confronted with the arrival of internally displaced persons fleeing the country's post-electoral violence. New host communities in these areas have experienced a steady erosion of their livelihoods and a significant decline of their coping mechanisms. In north western Kenya the primarily pastoralist host communities are suffering from the loss of pasture, scarcity of water, declining terms of trade for sheep, goats and cattle, in addition to famine and drought.

In response to such developing humanitarian catastrophe, IOM is comprehensively assisting host and migrant communities by improving the livelihoods and income generation opportunities in food crisis affected communities and stemming down flows of rural-urban migration, and by establishing sustainable return mechanisms for those families that were displaced following the national election of 2008. Similarly, sustainable livelihood projects are being implemented in Ethiopia and the Sudan; benefiting thousands of vulnerable migrants and displaced communities.

All things considered, for the year 2009 IOM funding appeals for support of operations in the region amount to nearly twenty percent of the annual budget of the entire organization.[33] It is thus evident that the Greater Horn of Africa is, and will remain, a region of top priority to the Organization as it continues to witness complex environmental and migratory phenomena.

Conclusions

The threats to regional stability caused by a changing and progressively degrading environment are as clear as they are alarming. Particularly, the prospects of conflicts arising from environmentally-induced migration will tend to increase if no deep-

33 IOM (2009) pp.16-21

rooted actions are taken. Proactive, comprehensive, and coherent policies must thus be developed at all levels. As migration, conflict, and environmental processes are increasingly becoming transnational in nature, they require regional and bilateral cooperation frameworks to be effectively managed. Interventions planned and implemented by IOM, or by the United Nations System, need to build and complement the capacities of regional organizations such as the Africa Union (AU), the Intergovernmental Authority on Development (IGAD), and the Community of Sahel-Saharan States (CEN-SAD). In addition, serious recognition of the role that the African diaspora, including migrant organizations, can have in this process must be acknowledged, while co-development initiatives must be supported, and integrated into international development strategies.

On the contrary, the Greater Horn of Africa will increasingly be a region victimized by an unforgiving environment. Hundreds of millions of inhabitants, most of which are directly dependant on the exploitation of scarce natural resources, will continue to suffer the scourge of a degrading ecosystem and the damaging effects it brings to human livelihoods, migration, and security. The human, political, and financial costs of inaction are too great to neglect, particularly when we consider that the victims of a changing global environment in the Horn of Africa bare little to no responsibility in fueling this phenomenon.

The International Organization for Migration maintains the commitment that; "*The effective management of environmental migration is essential to ensuring human security, health and well-being and to facilitating sustainable development. With more informed action and multi-stakeholder cooperation, societies around the world will be better able to achieve these objectives*."[34]

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Somali's Degrading Environment – Causes and Effects of Deforestation and Hazardous Waste Dumping in Somalia[1]

Abdullahi Elmi Mohamed

1. Introduction

General

Environment[2] is increasingly becoming an important issue in the world politics and global economy as well as people's life. Environmental deterioration[3] is now a global issue – ecologically, economically, politically[4] – that require global solution (Elliott, 1998). Today, the most notable environmental problems in the world include global warming leading to climate change, water pollution contributing to human health problems, deforestation resulting desertification, destruction of species, ozone depletion, increasing urban and industrial wastes, etc. Human activity and life is changing the environment in ways, on scale, quite unlike in any other era. This makes *our common future*[5] in jeopardy. Environmental problems occur in the interaction between two complex systems, the human-society system and the ecological system. However, to preserve security,[6] the entire human environment[7] is taken into consideration (Graeger, 1996).

1 An essay initially prepared for a PhD course of '*Environmental Systems Analysis & Management*' given by the Division of Industrial Ecology, KTH. The essay is presented at a final seminar for the course, on June 2001.

2 The term 'environment' is probably the most widely used in contemporary science but there is no consensus on what it means. However, for the purpose of this paper, the environment is considered to be a comprehensive term that includes both human and physical factors such as water, soil, vegetation and air as well as animal populations.

3 Environmental degradations is one of the major causes of civil unrest in the world.

4 World's biggest summit, otherwise known as Earth Summit or Rio Conference, is the UN Conference on Environment and Development held in Rio de Janeiro in Brazil in June 1996, attended 178 national delegations and many others.

5 Report of the World Commission on Environment and Development (WCED, 1987), known as Bruntland Commission.

6 With the end of the cold war, the breakdown of the 'military-security order' and the increasing knowledge of ecological systems and the effects of environmental degradation, a new security concept has begun. This resulted in a change from a focus on military security to environmental scarcity and security.

7 This, *Human Environment*, was the title of the first international conference on environment held in Stockholm, 1972. It was described as the event where international debate on the environment began (Tolba, Al-Kholy *et al*, 1992).

Large percentage of people's illness in poor countries is directly linked to the pollution of their natural environment. Improved environment resulting improved public health is therefore a clear element in the struggle and the strategy of poverty eradication. In general terms, population growth, economic development and growing inequality in income all put greater pressure on the ecosystems. Moreover, poverty[8] and political conflict, whish are the features of most developing countries, also cause environmental damage. Environmental degradation increases the poverty of those who are already poor especially in those parts of the world where livelihoods and lives are closely dependent on natural environment.[9] Globally, deforestation and illegal hazardous waste dumping, among other abuses, are human conducts bankrupting natural resources of future generations.

The Scope and the Purpose of the Paper

Somali is by no means an exception in the above situation. There are substantial challenges of environmental concerns in the country, which is far less studied. The country suffers from almost all types of environmental degradations. In one hand, Somalia is experiencing enormous and unprecedented environmental problems, while on the other hand the country lacks both human and financial resources as well as political and social stability to address these life affecting issues. In view of these above-mentioned situations, the paper will concentrate on describing and analyzing the subject in relation to Somalia. It will particularly focus on causes and effects of ongoing deforestation and hazardous waste dumping in the country.

The purpose of the paper is to discuss and shed some lights through analysis on deforestation and illegal hazardous waste dumping in Somalia. As methodology, literature and document review, information gathered from relevant organizations was carried out as well as on-field survey.

Background to Somalia

Located in the Horn of Africa, adjacent to the Arabian Peninsula, Somalia is geographically located in a very advantageous region, bordering both Indian Ocean and the Red Sea. Country's land area is estimated to 637 660 km^2. It shares borders with Kenya, Ethiopia and Djibouti, as shown in Figure 1.

8 Those who are poor and hungry will often destroy their immediate environment in order to survive (WCED, 1987:28).

9 See Elliott (1998:2).

Figure 1. Map over Somalia in the Horn of Africa.

The modern history of Somalia constitutes about 120 years (1880-2000): 80 years (1880-1960)[10] of colonial rule and division; 30 years (1960-1990) of democratic but mostly military rule and; 10 years (1991-2001) of chaos and State collapse. The widespread famine[11] in Somalia in 1992-93 caused by low agricultural yield due to several years of droughts combined with bloody civil war has resulted the largest UN humanitarian efforts and peacekeeping operations in history. Despite being politically disintegrated, Somali has culturally and ethnically homogenous society. Poverty, which together with injustice is threatening the integrity of the nation, is the major root of social conflict and cause of the current political crisis in Somalia.

The country has an estimated population[12] of about 9 million in 1995, of which 75% in rural areas. Rate of population growth is about 3%, while Mogadishu is growing by a rate of 10% a year (World Bank, 1995). It was estimated that Somalia has the largest population in Africa and it grows much faster than 3%. Agriculture is the second traditional occupation for most Somalis, after nomadic livestock[13] grazing/raising. Livestock and banana export is country's two principal revenue generat-

10 Lewis, I., M., 1988. *A Modern History of Somalia.*

11 Because of the adverse effects of the famine, which forced the people to eat animal skin, Somalia was at that time described in the media as the hell on the Earth. The world was also watching living skeletons on the TV coverage.

12 These estimations are based on the population census in 1987 (i.e. 7 million), but it seems that the civil war during 1990s may have caused a real reduction in the population size and growth. Data on population is however lacking.

13 The livestock is estimated to about 40 million (Somalia, 1988). Somalia rank third in the world in terms of pastoralist population size, and it is home to the largest camel population in the world

ing sectors. Somalia has one of the lowest human development index (HDI) in the world.

Physical Environment

Most of the country is typically sparse savanna with few forested areas. According to the World Bank, 55% of Somalia's land area is suitable for grazing, while the FAO estimate is lower, 29%, but still shows the greater for livestock production. Official estimates of Somalia's forest cover refer to 52,000 hectares of "dense" forest and 5.7 million hectares of "low density wood" (Somalia, 1987, ch. 7), this means that 9% of the total land is low density woodland – savanna woodlands. This is to indicate country's limited amount of wood resources, which mainly consist of *Acacias* trees.

On the other hand, Somalia has the longest coastline of Africa, which stretches a distance of about 3300 km in both the Indian Ocean and the Red Sea. The long coastline is of importance chiefly permitting trade with the Middle East and the rest of East Africa.

Historical and Ongoing Country's Environmental Concerns

Somalia is currently experiencing almost all types of environmental concerns, both natural and man-made.

Natural Environmental Problems

Indicating the level of water scarcity, rainfall is very low (250 mm/y) and variable, while the potential evaporation is extremely very high (over 2000 mm/y). Droughts that occur very frequent are naturally caused by climate. It leads to water shortage and starvation particularly for the rural communities, which are more dependent on rainwater and grass for their survival in livestock rising and cultivation traditions. Being a natural disaster, drought causes loss of life both human and animal every year in Somalia. Deadly droughts are often followed by devastating floods, another natural disaster, which mainly severely affects southern part of the country, where the two rivers, the Juba and the Shabelle, flow. These recurrent drought and severe floods affect the lives of the people and their animals without prediction and prevention.

Man-made Environmental Problems

Human-induced environmental abuses include: water pollution contributing to human health problems; alarming deforestation and overgrazing resulting desertification and soil erosion; salinisation by inefficient irrigation destroying valuable productive

(Markakis, 1998). In the country, camels are mobile searching for water and grass, which are naturally rare. They contribute to nation's overall economy.

land; illegal fishing and industrial toxic waste dumping in the sea and coastline areas by outsiders; improper disposal of human and solid waste by local people affecting the public health; hunting and extinction of wildlife; and degradation of coastal zones. Increasing population living along the coastline put a significant pressure on coastal aquifers for freshwater supply. Vast marine resources are under unprecedented threat from overexploitation and pollution by outsiders.

No Environmental Agency Ever Established

Despite of these major concerns, no central (governmental) coordinating body charged with environmental protection exist, even prior to the collapse of the state in 1991. However, several ministries and state agencies were concerned with protection and management of the environment as part of their function during the period before the civil war. National Parks Agency was established in 1970 for the purpose of establishing parks and reserve area. There was no however a single protected area listed in the country as late as 1991 (UNEP, 1993). The National Range Agency, founded in 1976, was empowered, inter alia, to establish grazing and drought reserves, and to prevent and control soil erosion on the range.

Among the limited range of concrete steps taken was the prohibition in 1969 of charcoal and firewood export, in order to protect trees. This was amended in 1972 to give a monopoly of charcoal exports to the National Commercial Agency.[14]

Prior to the state collapse, the Ministry of Fisheries and Marine Resources, founded in 1977, was responsible for prevention pollution of the sea. However, the capacity to control the long coastline was always lacking and no control of pollution has even existed.

2. Deforestation in Somalia

Deforestation – The Result of Charcoal

Charcoal[15] plays an important role in both the energy sectors and the economies of most African countries. Charcoal making provides a considerable amount of employment in rural areas; it also allows for a quick return on investments. However,

14 Transitional National Government (TNG) of Somalia in Mogadishu announced on 22nd of February 2001 that forest cutting and animal hunting should be stopped. This announcement was released on the STN Radio of Mogadishu by the Minister for Livestock, Forestry and Range. TFG institutions established in Kenya has also banned the export of charcoal as well as cutting of tree for charcoal export.

15 Charcoal production: The carbonization of wood is brought about by heating it to temperatures high enough for it to undergo substantial thermal decomposition. Temperatures reached in the process are usually in the range 400-500°C and a mixture of gases, vapors and a solid residue (charcoal) results. The temperature reached in the production process has a marked influence on the composition and yield of the charcoal produced.

the inefficiencies inherent to the production and use of charcoal place a heavy strain on local wood resources, resulting severe environmental consequences. In many parts of the world, the use of charcoal has been blamed for deforestation.[16] Deforestation in the drier parts of Africa has led to an even worse problem i.e. desertification and the loss of thousands of species. Deforestation is the product of the interaction of many environmental, social, political, economic and cultural forces at work in any given region.

Somalia – Deforested Country

During the last several years, a new type of business was introduced in Somalia. Cutting of trees to produce charcoal for export to the Gulf States has become a big business with considerable profits. In order to optimize the operation, local businessmen introduced a new technology – battery-powered chain saws for cutting of the forests. Trees are cut down, burn and brought by trucks for export from major ports in the country, particularly Mogadishu, Kismayo and Bosaso (BBC, 2000; and local newspapers).[17] Becoming Somalia's black gold, traders earn about $US million per ship (IRIN, 2000).

Most of the charcoal is made in southern Somalia, while northern and eastern regions also experience the same problem but to a lesser extent. More than 80% of the trees used for charcoal are types of Acacia, the most dominant species (IRIN, 2000). Due to absence of government, there is no documentation of the volumes being exported or the amount of trees being cut down.

Causes behind the Conduct

The alarming rate of deforestation has a number of combined causes behind it. It is evident that it is largely a combination of human activities and social conditions.

Charcoal for Urban and Firewood for Rural

Somalia has the lowest consumption of modern forms of energy in the Sub-Saharan Africa.[18] Firewood and charcoal are the major sources of energy for the majority of the people in Somalia. As a result of this, the removal of trees in Somalia is steadily

16 Grainger (1992) defined the deforestation as 'the temporary or permanent clearance of forest for agriculture or other purposes. Other purposes could be such as firewood, charcoal making, building, material etc. According to this definition, if clearance does not take place then deforestation does not occur.

17 On February 2000, QARAN PRESS of Mogadishu reported that the largest amount of charcoal was shipped from a natural port of Jasira outside Mogadishu by local businessmen. Uncountable Lorries loaded with charcoal were lining up in a queue occupying in an extremely long distance of the roads of the city on their way to the port for export.

18 Annual modern energy consumption in Sub-Saharan Africa is the lowest in the world (Davidson and Karekezi, 1993).

increasing, following demographic trends, which are reversing the traditional Somali nomadic way of life, as well as other social crisis. As their source of energy, rural people rely on firewood while urban inhabitants use charcoal. Mogadishu's charcoal supply comes mainly from the south. In rural areas, strong link between poverty and deforestation exist.

Like other countries in Sub-Sahara Africa, Somalia is presently, as well as in the past, suffering from energy problems. Power and fuels cut-off have been frequent in all urban centers, access to electricity have also been poor or unreliable, if not absent.

Potential Energy Resources – Un-exploited Sources

Yet Somalia is rich in energy resources, having un-exploited reserves of oil and natural gas, untapped hydropower, extensive geothermal energy resources, many promising wind sites, and abundant sunshine, which can produce solar power. Despite all these, traditional biomass fuels – mainly firewood and charcoal, the smoky and inefficient fuels of the poor – account for 82% of the country's total energy consumption (Makakis, 1998 p.74). Technically, it would not be problem to develop these potentially available energy resources. Major obstacles are today political, financial and institutional.

Foreign Demand for Charcoal – the Major Driving Force

Traditionally, the making of charcoal was limited to a small group of cutters who used hand axes and responded to an internal and very much localized demand, which during the last several years started to increase. In spite of increases in local consumption, foreign demand for charcoal puts unprecedented pressure on locally limited wood resources. Taking full advantage of country's lawless condition, interest-driven local businessmen[19] with commercial links in the Gulf countries export tremendous amount of charcoal to mainly Saudi Arabia and the United Arab Emirates. Charcoal from dry land in poor Somalia is used in the houses of the Gulf countries as luxurious. Charcoal export, which is now known as "black gold of Somalia" has replaced livestock export to the Gulf States. The Gulf countries banned the livestock export from Somalia and opened the gate for the charcoal instead.

Lack of Government – An Opportunity for Outsiders

Being without government since 1991 when the former regime was overthrown, Somalia is the only country in modern history of the world which lacked central government so long.[20] Since then the country is ruled by a series of rival warlords each

19 Greedy rich (in urban areas particularly with international commercial links) also destroy the environment more than the hungry poor (Goodland, 1991: 25). In view of environmental resources available for human beings, this fits into the Mahatma Gandhi's statement "there is enough for our needs not for our greedy".

20 After 10 years of collapse, the Somali State government is, however, now re-established at the Peace Conference in neighboring country of Djibouti, where a Transitional National Assembly (a

holding a small territory of the country. This created a condition which the country became stateless vulnerable for anyone's exploitation particularly outsiders and local self-interest-driven individuals. This lack of functional system of government and control facilitated these individuals to run these unsustainable business activities damaging local natural environment. Lack of government in Somalia could therefore be seen as the major cause of the ongoing deforestation.

The Issue of Land – Legal Perspectives

Institutional arrangement that specify rules, rights and obligation for the use of natural resources are called *property rights regimes*[21] (Bromley, 1991; Hanna, 1999). During the rule of the last regime (1969-1991), Somali government has tended to try to increase their control in land previously owned collectively by the communities in the rural areas. This was done through shifting the land-ownership from communal to state in pursuit of revenues and more control of the population. By the 1975 Land Law, all land in Somalia is nationalized. The new Law demands mandatory land registration which traditional landholders resisted. Consequently this has progressively limited local rights rather than supported. As the state authorities lacked capacities to manage and control the nationalized land, this legislation (of making the land a state property) made the land *no man's land* with open-access type of property-rights regime. [22]

The effect of that 1975 Land Law is therefore highly relevant for the ongoing land degradation. After the state collapse in 1991, the result became the creation of 'ownerless' land with open-access to anyone's exploitation which accelerated, among other abuses, the rate of deforestation. The land property which the state had claimed as its own and which the rulers had exploited during the military regime now became fair game for the new power brokers. Now as the people increase dramatically and some of the land naturally and antropogenically became degraded, new land with life-supporting-resource are required. Struggle for such a land thus became one of the major sources of the present conflict.[23]

Common resources, such as forest, which is free and open for all, tend to be vulnerable to depletion and degradation due to overuse and misuse, this is commonly referred to as "the tragedy of commons" (Hardin, 1968).

Parliament) and an interim President were elected in August 2000. Due to the current conditions, it has not yet become functional and recognized.

21 Common-property resources may be held in one of the four basic property -rights regimes (Osmon, 1990; Feeny *et al.* 1990; Bromley, 1989). These are State property, Communal property, Private property and Open-access property.

22 As freedom in the commons brings ruins to all (Hardin's notion, 1968), open-access is the absence of well-defined property rights.

23 The ongoing civil war in southern Somalia was described as a struggle for land (Besteman and Cassanelli, 2000)

Adverse Environmental Consequences of Deforestation

The illegal removal of trees in Somalia to produce charcoal for export is an action destroying the common national capital, which the society does not benefit. Although public awareness of the impact of the deforestation in Somalia has increased in recent years through media, it has not slowed the alarming rate of deforestation appreciably. As a result of deforestation, land suitable for grazing is destroyed. This will inevitably affect the nomadic communities who entirely depend on grazing. The most visible results of this action are desertification, soil erosion, and general environmental degradation. The highest price will be the long-term effect in desertification.[24]

The valuable role of trees in controlling runoff, water and the positive interaction of acacias with crops and animals are reasons why much more emphasis needs to be given to the forest protection. Deforestation will have major adverse impacts on rainfall availability, capacity of the soil to hold water, local climate, and habitat for animal species and bio-diversity. Basically, humans abandon areas that have been cleared, particularly when the community is nomadic depending on grazing for their animals. All these will finally collectively affect the livelihood and socio-economic aspect of the society.

In addition to environmental impacts, deforestation as an income-generating activity also causes internal dispute and conflict within the society. In 1997, actions taken by local chiefs and clan elders in areas in central Somalia who tried to prohibit charcoal cutting led to conflict, that resulted loss of life (IRIN, 2000).

3. Illegal Hazardous Waste Dumping in Somalia

Hazardous Waste and Illegal Dumping

World's chemical industries and nuclear energy plants[25] have already generated millions of tons of hazardous wastes.[26] Industrialized countries generate over 90% of the world's hazardous wastes (WCED, 1987). The high growth of industries in developed countries was accompanied by an equally high increase in the production of toxic hazardous wastes. But the technological capacity to handle these by-products – wastes, was not developing by the same level. This is the reason why problem of these wastes, particularly nuclear wastes, still remains unsolved. Taking advantage of political instability and high level of corruption but lured by the potential financial

24 But the traders laugh this off. "I remember as a child watching the cutters chop down trees in my area, and if you go back there now to the same place, the trees are even bigger than they used to be", declared one trader. "There will be no shortage of charcoal" he said (IRIN, 2000).

25 Today the world has over 450 plants of nuclear energy production. Of this, 108 are in USA and 150 in Europe.

26 Hazardous waste is the waste, which is not destined for productive use, but for disposal.

gains, poor African nations[27] have been used as the dumping sites for hazardous toxic waste materials from developed countries. In some cases, the income generated from this trade of importing hazardous waste from the West, have exceeded the GNP of many poor countries. Poverty is the reason of accepting importation of toxic wastes. [28] Bearing the cost of the damage caused by the hazardous wastes, Africa disbenefits the entire attempt of generating revenue to alleviate poverty. This *do-or-die method* becomes an alternative solution to the desperate search for revenue for some African countries, which are ill-equipped to dispose these health and environment threatening wastes. Both the exporting and importing counterparts violated international treaties to which most countries in the world are signatories.

Somalia – World's Most Attractive Illegal Hazardous Waste Dumping Site

During the Somali civil war, hazardous wastes were dumped in Somalia by industrialized countries. In the fall of 1992 reports began to appear in the international media concerning unnamed European firms that were illegally dumping hazardous waste in Somalia.[29] What caused controversy in 1992 were reports of a contract established by European firms with local warlords. The alleged perpetrators were Italian[30] and Swiss firms who entered contracts with Somali warlords and businessmen to dump waste in Somalia.

Investigations by the UNEP

In a news release statement (Tolba, 1992) by then executive director of the UNEP (United Nations Environment Programme) situated in Nairobi, Dr. Mustafa Kamal Tolba, it became apparent that the European firms was disposing a hazardous waste in Somalia. The UNEP started to investigate the matter five years later in 1997 and hired Mahdi Geddi Qayad[31] as a team leader (for a period of one month) to carry a field investigation in many areas of Somalia particularly coastal zones. The outcome of the investigation (a report) was not published but an Italian newspaper has succeeded to receive a copy of the report.

27 These include Benin, Djibouti, Guinea-Bissau, Nigeria, Senegal, Sierra Leone and Somalia (Alessandra, Jennifer and Shehu, 1993). The trade on waste dumping in Africa started already in 1970s. UNEP estimates that as much as 20% of hazardous waste trade goes to developing countries (Murphy, 1994).

28 A the Lome negotiations, Benin gave detailed explanations arguing importation of wastes had to do with survival.

29 See The Guardian (September 11, 1992); European Information Service (September 12 and October 6, 1992); BBC Somalia Branch (September and October 1992); Agence France Presse AFP (September 14, 1992); Inter Press Service (September 10, 11, 24, and 30, 1992); Saudi Gazette (September 13, 1992); Chicago Tribune (September 11, 1992); Reuters Limited (September 11, 1992); Somali Local Newspapers in Mogadishu. According to the local people, the waste was seen being dumped off the Somali coast into the Indian Ocean.

30 Italy produces between 40 and 50 million tons of industrial wastes and 16 million of household wastes each year (Alessandra, Jennifer and Shehu, 1993).

31 Mahdi was a former associate professor at the Dept of Chemical Engineering of the Somali National University.

Familgia Cristiana – an Italian Newspaper

Familgia Cristiana – an Italian Newspaper, has published several articles about the issue during 1998 (Familgia Cristiana, 1998). Based on the UNEP investigations as well as its own investigation, the newspaper gave relatively a detailed description. Familgia Cristiana (1998c) showed a map over the country particularly areas where wastes have been dumped and pictures taken from places where signs of the dumping could still be seen. According to the newspaper, waste dumping concentrated both in coastal zones and inland areas. Naming several individuals both Somalis and foreigners who involved in the waste transport, the newspaper disclosed many secrets in the business both in terms of deals made and health impacts on local people. In an $80 million contract in late 1991, two Swiss and Italian firms, Achair Partners and Progresso, would be allowed by senior local politicians at the time to build a 10 million ton storage facility for hazardous waste at the rate of 500 000 tons a year. Although the major part of the waste dumping in Somalia occurred after the state collapse in 1991, the activity has started even during the former regime in 1989 (Familgia Cristiana, 1998d).

According to the newspaper, there are ongoing dumping activities inside the country, and Mr. Halifa Omar Darameh of the UNEP said "our concerns are the negative consequences that these dumping can cause in the immediate future, and it is unfortunately impossible to safeguard a long coastline of 3 300 km long".

Parliamentary Report

In view of these serious waste dumping allegations against the Italian and Swiss firms, the Italian Parliament demanded a study on the issue. A commission for inquiries on waste products has been established. The final report (produced in 2000) of the parliamentary study said the so-called "Eco-Mafia"[32] run companies dealing with 35 million tons of waste a year, making $US 6.6 million. According to the report, radioactive waste from Italy dumped in Somalia may have affected Italian soldiers based there with a UN force in the mid-1990s. The report also disclosed that the Mafia controls about 30 percent of Italy's waste disposal companies, including toxic waste, according to a parliamentary study.

Tsunami disaster has disclosed the secret

The 2004 Tsunami has stirred up the hazardous waste deposits. This disaster forced the UNEP to formally announce that Somalia has been used as a dumping ground for hazardous waste starting about the early 1990s and continuing through the civil war there. The UNEP, which said the waste contains both industrial chemical waste of heavy metals and radioactive wastes, has also confirmed the world that European companies found it to be very cheap to get rid of waste there. The UNEP disclosed

32 Eco-Mafia is a new type of international businessmen trading on the transportation of industrial wastes generated in the developed world. Being self-interest group, Eco-Mafia transgress international laws regulating such a trade.

the secret but did not mention the outcome of the investigation it carried out in 1997. The UNEP could not carry out a proper in-depth assessment because of the high levels of insecurity onshore and off the Somali coast.

After large quantities of illegal toxic waste products became unearthed by the Tsunami, the WWF Italy argued that Italy has a grave responsibility in respect of what is occurring in Somalia.

The UN Special Envoy alarmed the ongoing dumping

The UN special envoy to Somalia, Ahmedou Ould Abdallah, has again in 2008 alarmed the issue of toxic waste dumping in Somalia, which is still ongoing practice. The UN envoy for Somalia confirmed that the world body has "reliable information" that European and Asian companies are dumping toxic waste, including nuclear waste, off the Somali coastline.

The role of hazardous waste dumping in the Somali piracy

The Somali piracy has several times during 2008 and 2009 caught the world news headlines. No study explaining the root causes of the piracy has been made, but there is a strong linkage between the piracy in the Somali coastlines and the hazardous waste dumping and the illegal fishing in Somalia. The Somali pirates claim to act as "coast guards," protecting their country's waters. The problem is mainly caused by the lack of central government in Somalia followed by illegal fishing of large foreign vessels which use a vacuum-cleaning type of fishing, leaving no fish for local fisher men. The powerful well-equipped foreign vessels fight against local fisher men over the marine resources.

There should be a war against the plundering and polluting of Somali natural resources by rich companies and countries, not only against the pirates, as they are both an act against the international law.

Dumping in Somalia

Several European companies are engaged in the business of dumping industrial and chemical wastes in Somalia. The relevant question is why is it that waste-dealers and importers ignore the long-term effect and obvious dangers associated with illegal dumping of toxic wastes in poor countries. But the more relevant question is *why dumping in Somalia*? Reasons that made Somalia *world's most attractive waste dumping site* are many and below are the most likely ones:

- *Country's political situation*: Since 1991 Somalia is lacking a central government that can safeguard its long coastlines and large territories. This seems to be the most likely reason that attracted the waste-dealers to use Somalia as a dumping site for the waste generated elsewhere.

- *The need to find dumping site*: Generally, there is a big problem of finding suitable dumping sites within the countries generating these wastes, as there are few areas left there. By finding a cheap site, the high costs of recycling, incinerating and disposing in original country could be avoided. According to a study by American University of Washington (1996), the cost of disposing one ton of hazardous waste in their source of generation was estimated to US$ 3 000 and as low as US$ 5 in a developing country.[33]
- *Geographical Location*: Located in a very geographically central location, It is easy to reach Somalia. This reduces the cost and the time of waste transport.
- *Low public awareness about the dumping*: During these years local people are in civil war associated social problems, which made them busy in their life affairs. Local media was not so effective. There were also fears of talking about the issue in the media.
- *Local self-interest individuals*: It was easy to establish local contacts (politicians and businessmen) that are ready to allow the dumping of these toxic wastes in their home country despite the long-term effects of the dumping on the local people, in only exchange for a relatively enormous amount of money in foreign currency, in a short period of time. This facilitates the disposal process.

Negative Environmental Consequences and Impacts on Related Issues

The effects of hazardous wastes dumped improperly on both human and other environmental components are inestimable. According to the newspaper (Familgia Cristiana, 1998), UNEP investigations and local people, the health effects so far identified are enormous. These include (i) the death of fisherman in the town of Brawe after opening a small container collected from the sea, (ii) the death of several people living the along the coastline who drunk water in a container, (iii) the increase of patients with cancer in Somalia, which were related to the toxicity of the wastes dumped in the country. In addition, a study made by an Algerian expert explained the link between the recent years' increase in livestock's death and the toxic waste dumping in the country. Dr. Pirko of the UNICEF said that the town of Bardere experienced unknown disease that caused the death of 120 people after suffering noise bleedings. This was also related to the toxicity. Premature births that occurred were due to the high toxicity of the dumpsite.

However, no research has been carried out on the existing and the potential environmental and social impacts of the waste dumping. The negative long-term impacts are expecting to be huge particularly pollution of the groundwater and fish resources, which will inevitably affect the overall public health and the entire socio-economy of the country.

33 But the study did not take into account the environmental and social costs in the developing countries in the future.

International Legal Instruments of Hazardous Wastes

The issue of waste dumping in Somalia is twofold in that it is both a moral and legal questions. First, it is ethically questionable to dump a toxic waste[34] in a very poor country in the midst of a protracted civil war with no central government. Being against moral principles, these conducts are beyond humanity and games played on the lives of innocent people. Second, there is a violation of international law in the export of hazardous waste to Somalia. Below are the international and regional laws regulating the waste 0transport.

The Basel Convention

The Basel Convention on the Control of Transboundary Movements[35] of Hazardous Wastes and Their Disposal is a broad and significant international treaty on hazardous waste. It was adopted in 1989 and entered into force on May 1992. The Basel Convention, ratified by 135 countries, is the response of the international communities to the problems caused by the ever increasing toxic wastes which are hazardous to people and the environment. Italy and Switzerland, whose private firms have been accused to dump waste in Somalia, are parties to the Convention, while Somalia is not.

Regulating the transboundary movement of hazardous wastes and providing obligation to its parties to ensure that such wastes are disposed of in an environmentally sound manner, one of the main principles of the Convention is that the hazardous waste should be treated and disposed of as close as possible to their source of generation. In addition, the Basel Convention urges that the generation and movement of hazardous waste should be minimized.

OAU Ban on Waste Transport

Equally important and with more regional significance was the voting of a resolution by the Organization of African Unity (OAU) to ban member countries from accepting industrial waste products. Half of members of the OAU are non-signatories of the Basel Convention. Despite the OAU's attempt to ban such trade, member countries have violated the ban. The reasons for doing so are based on economics; the need to generate substantial amounts of revenue to alleviate the economic hardships faced by Africa.

34 A toxic waste that is generated from a natural resource whose benefit has been used elsewhere than Somalia.

35 The term Transboundary Movement is adopted when the transportation and disposal of hazardous waster are done across international frontiers

4. Conclusion

This paper gave an overview of Somalia's degrading environment, particularly the ongoing deforestation and illegal hazardous waste dumping during the last decade. Since the state collapse in 1991, country's environmental degradation has accelerated; especially the rate of deforestation has steadily accelerated while toxic waste dumping became newly established business. Because of the country's political condition and the lack of central system of government, many foreign private companies, which are taking full advantages of the lawlessness and lack of central government in Somalia, started to either plunder or pollute country's natural resources. These opportunistic activities started immediate after the state collapse. Both deforestation and illegal toxic waste dumping in Somalia became evident after the disintegration of the country into clan-based areas following the overthrown the dictatorial military regime in 1991.

No research at any level has been conducted in Somalia, concerning the deforestation as well as the hazardous waste dumping. Particularly, the amount of waste dumped the number of trees cut down and their environmental social impacts. As deforestation will affect more than forests, the remaining forest reserves need to be protected.

Charcoal export has become big profitable business for local businessmen and their clients in the Gulf countries, who deliberately take full advantage of Somalia's lawless condition. The rate of deforestation in many parts of Somalia is alarming. These deadly business activities run by narrow-sighted self-interest individuals.

Taking Somalia as a case study, the paper indicates how poor countries in the developing world became targets for the Eco-Mafia dealing with the international traffic of toxic wastes generated in industrialized countries. Searching for cheaper ways to get rid of the wastes, the Eco-Mafia establishes local contacts especially irresponsible politicians and self-interest businessmen. European and Asian private companies particularly Italian and Swiss have been accused of illegally dumping hazardous wastes in Somalia during the last decade.

These illegal and immoral trades of charcoal and waste dumping are done in the knowledge of what the consequences are for the poor country of Somalia. This is one of the worst things currently happening in Somalia's natural environment and very high price for will be paid in the future. Through illegally dumping toxic waste from industrialized countries and foreign induced deforestation, Somalia's natural resources of future generations are bankrupted. These merciless damages to Somali's natural environment are legally and morally unacceptable.

These cases are just a few, which demonstrate the ineffectiveness of global attempts to regulate an industry that overshadow its very hazardous impacts. The lack of laws to protect the environment is nowhere as evident as in Somalia.

Apart from charcoal and hazardous waste dumping; illegal fishing, merciless hunting, water pollution, are all environmental abuses that have gone unchecked in Somalia for over a decade. The threat and damage done to Somalia's environment

will not receive the attention it merits as long as peace and political stability remain the main life-threatening conditions in the country. In its totality, the damage done to Somalia's natural environment is unimaginable and seems unmanageable even long after a solution is found for the current difficult prolonged political crisis.

Magnitude of water and environmental crisis and problems facing Somalia during this newly began century is unprecedented. The protection of Somalia's coastal zones from hazardous waste dumping and land from deforestation requires technological and organizational capacity as well as political stability sadly lacking in the country.

In terms of international law and moral principles, illegal dumping of hazardous waste is crime, particularly in areas where wastes are not originated and in poor people's land. As over-exploitation, misuse, destruction and pollution of natural resources are transgression against human existence and their natural environment, international as well as regional legal instruments regulating the illegal waste dumping are in place. Somalia has the legal right to be compensated what ever damage which the waste dumping and foreign-driven deforestation caused to the country.

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What if the Horn of Africa were in Tune?

Theodore M. Vestal

In mid-2009, the Horn of Africa is in turmoil. Every nation in the region is accused of violating human rights and deficits of democracy are widespread. Hunger, disease, poverty, continuous internal strife, and international warfare have been the hallmarks of the Horn in recent times. All of the worst characteristics of the inhabitants of the Horn dominated interactions of governors and subjects: greed, avarice, distrust, ethnic and religious hatreds. With few exceptions the Horn is a worst-case scenario. What can change this nightmare?

It is the objective of this conference on peace and the role of environment to confront this question and to recommend possible solutions. The participants in this conference, then, are dream-makers (to use a Native American term), analysts dedicated to driving away the existing nightmare and replacing it with a more peaceful rest for the people of the Horn. Such an improved dream would encompass nations that are effective democracies promoting freedom, justice, and human dignity; nations pursuing economic and political policies that benefit their citizens; free governments that do not oppress their people or attack other free nations.

Before we begin our dream-crafting, the deciding of what could be or what ought to be, in other words, a normative approach to the Horn's problems, let us first use an empirical review of what is.

The Emperical Situation: Conditions in the Horn of Africa, 2009

By the Horn of Africa, I refer to the nations of Ethiopia, Eritrea, Somalia, and Djibouti. This area encompasses 737,000 square miles, slightly smaller than the total areas of Great Britain, France, Germany, Italy, and Spain combined, inhabited by over 100 million people, a population larger than that of Germany, the most populous nation of Western Europe. Indeed, if the nations of the Horn were a single country, it would be the 12th largest country in the world in population.

The shortcomings of the Horn's governments are well rehearsed and distressing. Tyranny persists in its harshest form in most of the countries. The people are ruled by

despots under despotic systems marked by brutality, corruption, instability, poverty, and suffering. What democratic freedoms the people might once have enjoyed are eroded, and basic human rights, including freedom of religion, conscience, speech, assembly, association, and press are badly abused.

The governments in the Horn and their human rights records are recorded in, among others, the annual reports of the U.S. State Department, Amnesty International, and Human Rights Watch. By country, the most recent reports (2008) describe the situation as follows:

Ethiopia is a federal republic led by Prime Minister Meles Zenawi and the ruling Ethiopian People's Revolutionary Democratic Front (EPRDF) coalition. . . In local and by-elections held in April the EPRDF and allied parties won virtually all of the more than three million seats contested, severely diminishing opportunities for mainstream political opposition. Prior to the vote, ruling coalition agents and supporters used coercive tactics and manipulation of the electoral process, including intimidation of opposition candidates and supporters. . . While civilian authorities generally maintained effective control of the security forces, there were numerous instances in which elements within those forces acted independently of government authority. Human rights abuses reported during the year included limitations on citizens' right to change their government in local and by-elections; unlawful killings, torture, beating, abuse, and mistreatment of detainees and opposition supporters by security forces, usually with impunity; poor prison conditions; arbitrary arrest and detention, particularly of suspected sympathizers or members of opposition or insurgent groups; police and judicial corruption; detention without charge and lengthy pretrial detention; infringement on citizens' privacy rights including illegal searches; use of excessive force by security services in an internal conflict and counterinsurgency operations; restrictions on freedom of the press; arrest, detention, and harassment of journalists; restrictions on freedom of assembly and association…(U.S. Department of State, *2008 Human Rights Reports: Ethiopia, 2008 Country Reports on Human Rights Practices,* Bureau of Democracy, Human Rights, and Labor, February 25, 2009).

Eritrea is a one-party state that became independent in 1993 when citizens voted for independence from Ethiopia. The People's Front for Democracy and Justice (PFDJ), previously known as the Eritrean People's Liberation Front, is the sole political party and has controlled the country since 1991. The country's president, Isaias Afwerki, who heads the PFDJ and the armed forces, dominated the country, and the government continued to postpone presidential and legislative elections; the latter have never been held. The border dispute with Ethiopia continued, despite international efforts at demarcation. The situation was used by the government to justify severe restrictions on civil liberties. . . The government's human rights record remained poor, and authorities continued to commit numerous, serious abuses, including: abridgement of citizens' right to change their government through a democratic process; unlawful killings by security forces; torture and beating of prisoners, some-

times resulting in death; abuse and torture of national service evaders, some of whom reportedly died of their injuries while in detention; harsh and life threatening prison conditions; arbitrary arrest and detention, including of national service evaders and their family members; executive interference in the judiciary and the use of a special court system to limit due process; and infringement on privacy rights, including roundups of young men and women for national service and the arrest and detention of the family members of service evaders. The government severely restricted freedoms of speech, press, assembly, association, and religion. The government also limited freedom of movement and travel for expatriates, personnel of humanitarian and development agencies, and employees of the UN Mission to Eritrea and Ethiopia (UNMEE). Restrictions continued on the activities of nongovernmental organizations (NGOs). . .The government acted as a principal source and conduit for arms to antigovernment, extremist, and insurgent groups in Somalia, according to a June report issued by the UN Munitions Monitoring Group (U.S. Department of State, *2008 Human Rights Reports: Eritrea,2008 Country Reports on Human Rights Practices,* Bureau of Democracy, Human Rights, and Labor, February 25, 2009).

Somalia the territory, which was recognized as the Somali state from 1960 to 1991, was fragmented into regions. . . the Transitional Federal Government (TFG) . . .; the self-declared Republic of Somaliland in the northwest; and the semi-autonomous region of Puntland in the northeast. The TFG was formed in late 2004, with a five-year transitional mandate to establish permanent, representative government institutions and organize national elections. [Sheikh Sharif Sheikh Ahmed was elected president in January 2009]. . . Ethiopian National Defense Forces (ENDF) entered the country in 2006 at the request of the TFG to combat the Council of Islamic Courts and its associated armed militants. . . Fighting between TFG/ENDF forces and their militias against antigovernment forces, terrorist groups, and extremist elements increased and resulted in widespread human rights abuses, including the killing of thousands of civilians (there are no reliable estimates for the number and most presented vary widely), the displacement of over one million persons, and widespread property damage, particularly in Mogadishu. The larger clans had armed militias at their disposal, and personal quarrels and clan disputes frequently escalated into killings. Targeted assassinations, once rare, became frequent. Roadside bombings increased and there were four suicide bombings reported during the year... The country's poor human rights situation deteriorated further during the year, exacerbated by the absence of effective governance institutions and rule of law, the widespread availability of small arms and light weapons, and ongoing conflicts. As a consequence citizens were unable to change their government. Human rights abuses included unlawful and politically motivated killings; kidnapping, torture, rape, and beatings; official impunity; harsh and life-threatening prison conditions; and arbitrary arrest and detention. In part due to the absence of functioning institutions, the perpetrators of human rights abuses were rarely punished. Denial of fair trial and limited privacy rights were problems, and there were restrictions on freedoms of speech, press, assembly, association, religion, and movement. . . Members of antigovernment, extremist groups, and ter-

rorist organizations like al-Shabaab, some of whose members were affiliated with al-Qa'ida, committed numerous human rights violations, including killings of TFG members and civilians; kidnappings and disappearances; restrictions on freedom of movement; displacement of civilians; and attacks on journalists, aid workers, civil society leaders, and human rights activists. (U.S. Department of State, *2008 Human Rights Reports: Somalia, 2008 Country Reports on Human Rights Practices,* Bureau of Democracy, Human Rights, and Labor, February 25, 2009).

Djibouti is a republic with a strong elected president and a weak legislature. . . In February legislative elections, President Ismail Omar Guelleh's five-party coalition won all 65 National Assembly seats. A three-party opposition coalition boycotted the race, which international observers from the African Union and the Arab League considered generally free and fair. In June Eritrean troops exchanged fire with Djiboutian troops at Ras Doumeira peninsula, along the Djibouti- Eritrea border, and near the strategic Bab-al-Mandeb Strait between the Gulf of Aden and the Red Sea. At year's end Eritrean troops continued to occupy the country's territory, despite condemnations by the United Nations, the Arab League, and the African Union (AU). The government's human rights record remained poor, although there were improvements. Serious problems included difficult but improving prison conditions; corruption; official impunity; arbitrary arrest and detention; prolonged pretrial detention; interference with privacy rights; restrictions on freedom of the press, assembly, and association; and restrictions on unions … (U.S. Department of State, *2008 Human Rights Reports: Djibouti,2008 Country Reports on Human Rights Practices,* Bureau of Democracy, Human Rights, and Labor, February 25, 2009).

According to the U.S. State Department Human Rights Reports all the governments of the Horn have poor records in protecting human rights. The egregious commonalities shared by all four Horn governments include limitations on citizens' right to change their governments; corruption; official impunity; arbitrary arrest and detention; lengthy pretrial detention; difficult prison conditions; interference with privacy rights; and restrictions on freedom of press, assembly, and association. Other human rights deprivations such as unlawful and politically motivated killing, kidnapping, disappearances, torture, rapes, and beatings are reported as specialties of particular nations. Human rights reports cast doubt on how effective the rule of law really is in the Horn. Due process of law and equal protection of the law appear lost.

Neither is democratic governance flourishing in the Horn. *The Economist* has examined the state of democracy in 167 countries and attempted to quantify this with an *Economist Intelligence Unit Index of Democracy* which focused on five general categories: electoral process and pluralism, civil liberties, functioning of government, political participation and political culture. According to the *Economist Intelligence Unit's Democracy Index 2008* Sweden had the highest score or was the truest democracy, while North Korea scored the lowest. Somalia did not make the list because of its lack of an effective government. The other three Horn governments were in the bottom 26 percent of the nations. Ethiopia was characterized as a "hybrid regime," barely qualifying as a democracy, while Djibouti and Eritrea were called "authoritar-

ian regimes." Freedom House also gives abysmal ratings to the nations of the Horn in denying political rights and widely and systematically denying civil liberties. None of the Horn nations qualify as "free." The Freedom House Index for 2009 ranks Somalia among the worst countries and Eritrea only slightly above the worst-ranked countries, and during the past several years, both nations have been consistently rated as "non-free." Ethiopia and Djibouti are rated "partially free" (countries where there is limited respect for political rights and civil liberties). Partly Free states "frequently suffer from an environment of corruption, weak rule of law, ethnic and religious strife, and often a setting in which a single political party enjoys dominance despite the façade of limited pluralism."

Human development likewise lags in the Horn. The United Nations Development Program's Human Development Statistical Update released on December 18, 2008, ranks Djibouti, Eritrea, and Ethiopia near the bottom on the U.N.'s 179-nation Human Development Index. Somalia doesn't even make the list, since it was unable or unwilling to provide the necessary data. The Human Development Index (HDI) is a comparative measure of life expectancy, literacy, education and standards of living for countries worldwide. It is a standard means of measuring well-being, especially child welfare. Of the 179 nations included, Sierra Leone had the lowest score. Ethiopia ranked 169th, Eritrea was 164th, and Djibouti was the highest in the Horn at 151st.

According to the UN Development Programme Report 2007/2008, Djibouti also had the highest literacy rate among Horn nations with 70.3% of its population able to read and write at a level adequate for communication, ranking it 134th in the world; Eritrea was 149th with 60.5%; and Ethiopia ranked 170th (the 7th lowest rate in the world) with 35.9%. If literacy is a tool in combating poverty, then the countries of the Horn have an immediate challenge in promoting better education for their citizens.

Hunger continues to haunt the Horn, a region that some of the world's best scientists for over fifty years have been saying should be the bread basket of Africa. Blessed with a splendid climate, rich soil, and intelligent human resources, the area's potential is great, but the reality is bleak. The 2008 Global Hunger Index was calculated for 120 countries in Asia, Latin America and the Caribbean, and Sub-Saharan Africa. After excluding countries where hunger was low (and Somalia, where figures were not available), the GHI ranked 88 countries in total. Higher scores indicate greater hunger problems. The countries with the highest 2008 GHI scores are predominantly in Sub-Saharan Africa, and Eritrea, with a value of 39, had the second most dismal record. Ethiopia's value of 31 was the sixth worse in Africa. The large GHI scores in these two Horn countries are due to high child mortality and a high proportion of people who cannot meet their calorie requirements. Low government effectiveness, war and violent conflict, and political instability, and high rates of HIV/AIDS, have driven these two indicators. Over 75 percent of that total population of Eritrea is undernourished, and Ethiopia reports 46 percent of its people in that category. Djibouti with a much smaller population fares better with a GHI value of 20.9, and 24 percent of its total population undernourished. The GHI labels the

Djibouti situation "alarming," while Ethiopia and Eritrea rank as "extremely alarming." In June 2009, the UN's World Food Programme provided food assistance to 17 million people in Horn of Africa, a figure roughly the equivalent of the combined populations of Sweden, Norway, and Denmark.

Poverty plagues the Horn, although the port activities of Djibouti provide that nation with far better statistics than those of its larger neighbors. Gross domestic product (GDP) per capita is one of the measures of national income and output for a given country's economy. According to the *CIA World Fact Book*, estimates for 2008 were Djibouti, $3,700 (131st in the world); Ethiopia, $800; Eritrea, $700; and Somalia, $600 (190th out of 194 nations listed). What economic gains had been made by Horn nations in recent years were jeopardized by the global financial crisis of 2009 with steep rises in fuel, food and fertilizer costs and fluctuating swings in commodity prices. These erosions in the region's economies threaten to push the nations of the Horn into deeper indebtedness and crushing poverty.

Health problems are endemic throughout the region. Governments in the Horn struggle to turn the tide against AIDS and other infectious disease. Improved health systems are needed to treat and control pneumonia, diarrhea, tuberculosis and malaria; to achieve better child survival rates and immunize against measles, polio, and meningitis; to strengthen reproductive health planning and improve maternal and child nutrition practices. A related problem is the pressing need to provide clean water to the poor. The governments of the Horn will be sorely pressed to combat threats of health pandemics, climate change, and narcotrafficking.

The Horn of Africa does lead the world in one category: the number of violent conflicts. Complex and deeply rooted political conflicts persist within all of the nations. Ethnic strife in Ethiopia remains a constant, with the Ogaden National Liberation Front currently the cause célèbre. Somalia's fall from grace with its bloody and often barbaric struggles has generated an epidemic of piracy, a mutilation of justice, a massive influx of refugees into Kenya, and a growing concern about cross-border terrorism.

As if the governments did not have enough on their internal security platters, some foment turmoil in or with neighboring lands. Somalia is a stereotypical battleground for surrogate wars of other Horn countries. Ethiopian troops had a prolonged stay in that troubled land, while Eritrea is accused of supplying aid to anti-government forces there. Within the Horn, Eritrea is especially adept at allegedly poking its finger in the eyes of bordering states. The festering dispute between Ethiopia and Eritrea over Badme remains a persistent threat to peace.

Some regional conflicts are a bitter legacy from previous decades that continue to affect security interests in the Horn today. Regional conflicts do not stay isolated for long and often spread or devolve into humanitarian tragedy or anarchy. Outside parties can exploit them to further other ends, as al-Qaida presently does in the fighting that rips apart Somalia. Outsiders generally cannot impose solutions on parties that are not ready to embrace them, but outsiders can sometimes help create the conditions under which the parties themselves can take effective action. Therefore, it follows that the fewer the regional conflicts, the fewer outside influences will muddy the waters of development in Horn countries.

How did the governments of the Horn come to exist with such terrible records as viewed by the world? The ways were varied, but all ended up with something less than democracy where power is widely shared and free governments are accountable to their people. Ethiopia went from monarchy to revolution to "actually existing socialism" under the Marxist-Leninists Derg to the 1991 liberation front one party (regardless of the alphabet soup of acronyms for surrogate parties) oxymoronic "democratic centralism" led by former Marxist-Leninists who have learned capitalist-speak. Eritrea sprang from liberation front revolution to plebiscite in 1993 to strong man dictatorship. Somalia gained independence in 1960 with a hostile attitude toward neighboring nations and succeeded in squandering one of the few democratic systems that developed in the Horn when a military coup in 1969 brought in an ill-fated "scientific socialism" that disintegrated into chaos that continues to the present. Djibouti, the latecomer to the world scene, was born in 1977 when France transferred sovereignty to its former colony which has since had a flawed history of dictatorial presidential dominance of governance. Anecdotal evidence suggests that few residents of the Horn are content with the tyrannical systems they live under. Many types of authoritarian government have been tried and failed to relieve suffering in the four nations. One system has not been given a fair trial over a long enough time to record meaningful accomplishments. That system is real democracy.

The Normative Approach: What should be done?

How can this change? How can an environment for development be established throughout the Horn? The process must begin with peace throughout the region. Only then can a two-pronged development strategy be put in place.

The first prong is the promotion of freedom, justice, and human dignity – the working to end tyranny, to promote effective democracies, and to extend prosperity through free and fair trade and wise development policies. Truly democratic nations are responsive to their citizens, submitting to the will of the people, especially when people vote to change their government; exercise effective sovereignty and maintain order within their own borders, protect independent and impartial systems of justice, punish crime, embrace the rule of law, and resist corruption; and limit the reach of government, protecting the institutions of civil society, including the family, religious communities, voluntary associations, private property, independent business, and a market economy.

Free governments are accountable to their people and govern their territory effectively. In effective democracies, freedom is indivisible. Political, religious, and economic liberty advance together and reinforce each other. Governments that protect these liberties are ultimately more stable, successful, and secure. Thus the people of the Horn need to figure out how to successfully manage their agricultural systems and then harness the tools of economic assistance, development aid, trade, and good

governance to help ensure that their governments are not burdened with economic stagnation or endemic corruption. Free governments also respect the sovereignty of neighboring states and do not attack other free countries. Peace and international stability are most reliably built on a foundation of freedom.

The second prong is based on the idea that many of the problems the Horn of Africa faces – from threat of pandemic disease, to proliferation of weapons, to terrorism, to human trafficking, to natural disasters – reach across borders. Effective multinational efforts by the Horn nations are essential to solve these problems.

If one accepts these two prongs as basic to development in the region, all the strategies and proposals being generated in our conference will amount to nothing unless they are built on the firm foundation of truly democratic governments in the region that get along with one another. Cooperation among developing countries would obviously be beneficial, and the resources of the four nations would be complementary. This would be a significant first step in realizing "what ought to be" in the Horn.

While such a situation would be conducive to a more productive, dynamic region, there would still be built-in problems. The fractured economies that currently exist would remain in place. The landlocked economic powerhouse, Ethiopia, would continue as a giant without a head, lacking its own ports from which to send and receive goods. Eritrea, with two fine ports, but limited agricultural and production capacity, would need the body of Ethiopian commerce to prosper. Djibouti would continue to be a head connected to the body of the Horn by only a few narrow strings. The economy of Somalia will take time to rejuvenate, but the potential of its livestock and agricultural sectors would remain circumscribed by national boundaries.

How then can problems emanating from the geographical and nationalistic status quo be surmounted? If the nations of the Horn have the ability to exist peacefully in their historically dictated bailiwicks, why stop there? Why not combine the four countries into one mega-nation based on true democratic federalism? Private property, the guardian of every other right, would be the economic norm, and democracy, the wide-sharing of political power would be the hallmark of governance. The states or provinces comprising the federal union would be established on the basis of geographic, cultural, ethnic, and political considerations. If present national boundaries serve to block the free flow of goods and commerce, why not open the area as "a free trade zone" inherent in a free flow of interstate commerce? If Ethiopia, the agricultural giant of the region, lacks ports, why not open wide to it the maritime capabilities of Djibouti, Eritrea, and Somalia? Imagine the flourishing ports of Berbera, Mogadisho, Kismayo, Massawa, Assab, and Djibouti resulting from improved ties to the Ethiopian hinterland! If food shortages plague certain areas because commodities cannot easily be transported from producers to consumers, why not build a system of roads and rails connecting distribution points? Of course, the Ethio-Djibouti Railway Enterprise, although presently beset with troubles, has demonstrated that trains can play a significant role in moving goods and people great distances to and from a major port. With hydro-electric power one of the great potential strengths of Ethiopia, why not extend that nation's electric grid throughout the region and create electric railways spanning the Horn or power factories at capacity levels?

In modern times, the only attempt to foster such interstate commerce was carried on, for the wrong reasons, by Italian colonialists who briefly united almost the entire Horn – at the point of a bayonet. Mussolini's Fascists, with all their reprehensible ways, recognized the need to operate *Africa Orientale Italiana* as an economic entity and built up a communications infrastructure to facilitate military mobility. Some magnificent all weather roads and rail lines that terminated in port cities were constructed. Ports were expanded and modern airports built. Unfortunately, many of these improvements did not survive the end of World War II. But the seeds of precedent for interstate commerce were planted – even if they were sown on what became fields of battle.

Several recent thoughtful studies outline a federal government structure for some or all of the nations of the Horn.[1] All agree that political union could "assuage internal frictions, minimize external interference" in the affairs of the region, "facilitate the wide-spread mobilization of resources for growth and development, and create propitious conditions to address the interlocking problems" of the Horn. Mobility of labor, goods, and capital would exist as never before. A single state would encompass freedom of movement for pastoral herders as well as migrant labor. With a federal government in charge of finance and currency, defense, foreign affairs, foreign trade, and transport, state or provincial governments could concentrate on the democratic workings of government closer to the people. Further, the argument can be made that rapid economic development does not lend itself to incremental steps. Following the example of U.S. President Barak Obama who did not attempt to cure an ailing economy with timid, incremental steps, why not take on all the Horn's development problems at once? With such an approach, poverty and underdevelopment could be confronted in a shorter time rather than longer. A federal union of the Horn would be the second step in bringing about what ought to be.

But how can the diverse, often antagonistic people of the Horn, riven by sharp divisions of nationality, ideology, ethnicity, clan, and religion possibly come together to form a political union? Suspicions, rivalries, apathy, and greed are played upon by government leaders to foment hatred of "the other" in society – thus redirecting the attention of the masses from problems close to home to scapegoats purportedly creating harmful situations. Such hatred unleashes the great beast, the capacity for outraged, uncontrolled, bitter, and bloody violence that lurks beneath all the norms of legal and institutional behavior in normal society. With this violence bearing the imprimatur of "legitimate political authority," the people of the Horn are ruled by a malevolent spirit that generally makes life nasty, brutish, and short. This is in contrast to the most well-to-do countries of the world enjoying the highest "quality of life," which are those that permit the freest expression of civic spirit. In democratic countries, the free play of class, gender, ethnic, and other interests are all subordinated to the respect of the universal and inclusive attributes of citizenship.

The great majority of the proud and intelligent people of the Horn would prefer to live in a society where the better angels of their nature reign. But how can this be brought about? So long as the relationships of the citizens of the Horn are defined by their differences, they will empower those who sow hatred rather than peace, those

who promote conflict rather than the cooperation that can help all of the people achieve justice and prosperity. So long as the citizens of the four nations accept the malevolent rule of tyrants, the region will exist in a realized state of what Robert Kaplan called the "coming anarchy" characterized by scarcity, crime, overpopulation, clan warfare, and disease destroying the social fabric of society. A culture of mistrust of others will continue to prevail. People of various faiths will still call others "unbelievers, heathens, infidel Crusaders," and worse epithets and feed on the poison of contempt aimed at the gullible by government or religious propagandists. Is falling prey to the toxins of violent extremists the best the people of the Horn can do?

Can the two largest religious groups of the Horn, the Christians and the Muslims, be reconciled and live together in peace? There is ample precedent for such a state. The first goes back to the earliest days of Islam (615 AD) when seventy Muslims sought refuge in neighboring Ethiopia in order to escape the persecutions of the Kurayshites in Mecca. The Christian Axumite emperor Armah (also known as Nagashi) gave sanctuary to the party. This benevolence on the part of the Ethiopian ruler so touched the Prophet Muhammad that he issued a *Hadith* abjuring *jihad* against Abyssinia and proclaimed: "Abyssinia is a land of justice in which no one is oppressed." Their sojourn in Ethiopia greatly impressed these early Muslim migrants and influenced the future development of their new faith. This episode brought about centuries of peaceful interactions between the two faiths.

A second example also has an African genesis. In the 8th Century AD, Moors of North Africa invaded Spain and ruled in most of that area for several centuries. These Muslim conquers did not force their religion on the Spaniards. Christian, Jew, and Muslim were treated equally during the dynasty of the Ummayads (715-750 AD) and this did not change drastically in later Muslim dynasties that lasted until 1215. The Moors did not suppress the language of the people, did not outlaw their customs, did not destroy their legal system, rob them of their political rights, or deny them their claim to humanity. Andalusian society was flexible and open: "Side by side with the new rulers lived the Christians and Jews in peace." A man of humble station, whether Muslim or non-Muslim could climb the social ladder and occupy any high position except that of supreme ruler.[2]

The people resided in a society which espoused the great importance and sanctity of knowledge. Andalusian Islam accommodated new ideas with grace and a civilized tolerance. Muslim scholars absorbed and synthesized and expanded upon the knowledge of the Ethiopians and Egyptians, the Phoenicians, the Greeks, the Chinese, and the Indians. Foreign intellects and students from Asia, Africa, and Europe flooded into al-Andalus. Women enjoyed more societal freedom than in any other part of the Islamic world. The *amir*, the ruler himself, preached a vision of societal comity on regular occasions from the *minbar* of the Friday Mosque. The mantra of the time was that there is no conflict between "the work of God and the word of God." From these enlightened policies flowed the fabled *convivencia*, an ethos of storied tolerance and mutuality in which Muslims, Christians, and Jews long enjoyed civilized coexistence[3] that might serve as a model for the Horn of Africa today. .

Yet a third example of amity among neighboring traditions comes from Sufism which appeared in the Horn during the fifteenth century and rapidly became a revitalizing force for Islam. Members of Sufi orders, commonly called dervishes, wandered throughout the region teaching and seeking alms. They sought to bring about *re-edification*, the rebuilding of spiritual man from his ruined state.[4] Their influential legacy is seen in the three Sufi orders that are prominent in Somalia today: the Qadiriyah, the Ahmadiyah-Idrisiyah, and the Salihiyah. Many Somalis say that the Sufi version of Islam, which stresses tolerance, mysticism and a personal relationship with God, is more congruent with their traditions than the Wahhabi Islam espoused by the Shabab, the armed wing of the Islamic Courts Union, which calls for strict separation of the sexes and harsh punishments like amputations and stonings.

Though commonly identified as a sect of Islam, the Sufis are at home in all religions and "believe Sufism to be the secret teaching within all religions." The Persian Sufi poet, Jalaluddin Rumi (1207-1273), used certain mental and physical exercises designed to open the mind to the recognition of its greater potential, through the theme of harmony. Harmonious development practiced by Rumi led him to conclude that he could just as easily worship God in a church as in a Synagogue or as in a Mosque. For Rumi, "Christian, Jew, Muslim, shaman, Zoroastrian, stone, ground, mountain, river – each has a secret way of being with the mystery, unique and not to be judged." Wrote Nizami the Persian Sufi,"Under the poet's tongue lies the key of the treasury."[5] Was he thinking of Ethiopians with their love of poetry or of the Somalis' rich oral tradition? The Sufis, while remaining true to their traditional faith, sought a society where the mind is without fear and the head is held high. Where knowledge is free. Where the world has not been broken up into fragments by narrow domestic walls. Could such aspirations from the past offer a chart and compass for a new voyage in the Horn of Africa?

There is also a practical reason for members of the two largest faiths in the Horn to seek prosperous coexistence. Although the accuracy of census figures for the nations and religions of the Horn may be questioned, there are today approximately 55 million Christian and 41 million Muslim residents. The majority Christians, primarily in Ethiopia, should realize that it is not in the interests of the Horn for a large and devoted minority community to remain sullen and un-reconciled. An effort to win its confidence is worthwhile. Among the followers of Islam too there is an increasing number who see the need for allaying the suspicions of the Ethiopian Christians, without whose help the Muslim community could not be rescued from its less than desirable condition. Significant religious developments within the penumbra dividing Muslim from Christian could soften religious acerbities in the Horn. What would happen if the Prime Minister of Ethiopia appeared to be reaching out to Islam? Or if the President of Somalia extended the hand of brotherly love and fellowship to Christianity? Perhaps the Christians and the Muslims could be at peace in the house which Abraham had built – in different rooms perhaps but under the same roof. Perhaps the interests they share as human beings would be seen as far more powerful than the forces that drive them apart.

If one sees issues that bind rather than fracture, the groups may find that they have more in common than they had previously appreciated. For example, in Ethiopia, Christians and Muslims have found it possible to join in common religious observances. They celebrate each other's holidays together. They go on pilgrimages together and visit each other's holy places for help when in distress. This inclination to go on pilgrimages is called by Donald Levine, "a notable pan-Ethiopian trait."[6] The Christians and Muslims also invite each other to their homes, although they eat at different tables – to satisfy their spiritual leaders.

The truth is that Christianity and Islam are not exclusive and need not be in competition. Instead, they overlap, and share common principles – principles of justice and progress; tolerance and the dignity of all human beings. Indeed, respect for law and justice is inherent in the Judeo-Christian-Islamic traditions. All believe in the Golden Rule – the call to treat one another as we wish to be treated. Justice was indispensable to temporal rulership according to Persian Muslim writer Barni Fatawa-yi-Jahandari in the 14th Century: "From the time of Adam to our own days the people of all communities throughout history are united in the opinion that justice is a requisite of religion and that religion is a requisite of justice."[7] All the people of the Horn share a reasonable political conception of justice or a core morality. This core morality, based on basic tenets of the Abrahamic traditions, is differently elaborated in the cultures of the various groups. But the core commonalities are the basis on which public discussion of fundamental political questions can proceed and be reasonably decided, not of course in all cases, but in most cases of constitutional essentials and matters of basic justice. From that base, the people of the Horn could develop social cooperation "guided by publicly recognized rules and procedures that those cooperating accept and regard as properly regulating their conduct."[8] This would be a major change from the socially coordinated activity of the past in which orders were issued by despots or some other central authority.

By agreeing to cooperate and to accept certain liberal principles of justice as a way of cooperating, the people of the Horn could fashion a workable alternative to the endless and destructive civil strife that has plagued them during the past half century. Central to such an alternative are the promotion of tolerance and understanding among ethnic groups and religions and a deep respect for everything that would constitute "otherness," a respect acquired from understanding the positive values in other cultures. To foster such understanding, members of the various communities must say openly to each other the things they hold important and that too often are said only in private. There must be a sustained effort by the groups to listen to each other; to learn from each other; to respect one another; and to seek common ground.

But what of those matters, such as faith, that cannot be agreed upon? No matter how much one might want to bridge such gaps – indeed, while one knows that the views of the various peoples of the Horn on the subject are complex and even contradictory – the fact is that at some level, the views of Christians and Muslims are irreconcilable. Each side will continue to make its case to the public with passion and conviction. But surely they can do so without demonizing those with differing views or reducing them to caricatures.[9]

Conclusion

The dream described in this article seeks a new beginning among the peoples of the Horn, one based on mutual interest and mutual respect, and one based ultimately upon moral and spiritual force. The crisis in the Horn is fundamentally a moral one. The nations and their people must re-arm morally. Moral recovery is essentially the forerunner of economic recovery. Moral recovery emphasizes cooperation, honesty, and mutual respect between groups.

Historically, there is a classic example of moral recovery reconciling strongly opposed nationalist groups. The Oxford Group of the 1930s morphed into Moral Re-Armament (MRA) in the post-World War II era. MRA played a major role in, among other matters, the astonishingly rapid Franco-German reconciliation after 1945, the establishment of independence for Morocco in 1956, and a peaceful uniting of Greeks and Turks in Cyprus in 1960. The basic tenet of MRA was that the reformation of the world could only be achieved by creating a moral ethos and by convincing all people of the necessity of *absolute honesty, absolute purity* (within one's religious tradition) , *absolute unselfishness,* and *absolute love* (in the brotherly or sisterly sense). One of the movement's core ideas was that changing the world starts with seeking change in oneself. MRA also encouraged its members to be actively involved in political and social issues. Members "rolled up their sleeves" and went to work while others "stood back and criticized." They worked on the principles not of "who's right" but of "what's right." The result, as founder Frank Buchman described it, was that "Catholic, Jew and Protestant, Hindu, Muslim, Buddhist and Confucianists – all found they can change, where needed, and travel along this good road together."[10]

Without debating the premise that MRA was a "good road of an ideology inspired by God upon which all can unite," one can accept the benefits accruing from the spirit of a zealous organization aimed at healing history, transforming relationships, and building community. It is just such a spirit and dedication that is needed by the people of the Horn to form a rallying ground against the forces of tyranny and cynicism in their homelands. The proud and intelligent people of the Horn must rise up in the face of great odds to institute meaningful self-government and a restoration of the best rather than the worst in human nature. An African-style moral rearmament giving life to MRA principles in its own way must be initiated to appeal to the better angels that have always existed in the traditions of the people. Throughout history, Islam has demonstrated through words and deeds the possibilities of religious tolerance and racial equality. And Christianity has proclaimed, "Blessed are the peacemakers, for they shall be called the children of God" – a sentiment echoed by the Saints of the Orthodox tradition.

A heavy responsibility falls upon the people of the Horn. Can they look forward rather than backwards? Can they put an end to the recurring cycles of suspicion and discord that keep the region in turmoil? Can they commit themselves to a sustained effort to find common ground with their neighbors and to focus on the brighter

future that they dare to dream? If this can be done successfully, the Horn of Africa can become a new crossroads where "differences of culture and religion and conviction can co-exist with friendship, civility, hospitality, and especially love."[11] That is a dream worth pursuing.

Notes

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8. John Rawls, *Political Liberalism* (New York: Columbia University Press, 1993), p. 16.
9. On disagreeing civilly with opponents, see the Notre Dame University Commencement Speech by President Barak Obama, May 2009.
10. Frank N.D. Buchman, *Remaking the World* (London, 1955), p. 166. In 2001, the MRA movement changed its name to Initiatives of Change.
11. Quoted in Obama's Notre Dame University Commencement Speech

Climate Change and Violent Conflict: Is There a Link?

Gaim Kibreab

> Africa gives off less greenhouse gases than any other part of the world, but it is the most threatened by climate change. A warming climate will spread disease, shrink water resources, and deplete crops, creating conditions that produce more famine and conflict," stated Barack Obama in his first speech to the sub-Saharan Africa as the President of the United States of America from Ghana, Accra [1]

The 2007 report of the Intergovernmental Panel on Climate Change (IPCC), a panel of international experts created to assess the current scientific knowledge on climate, the Stern Review on the Economics of Climate Change (2006) and many other studies by imminent scientists have established that the earth's climate system is warming at an unprecedented level (see Fig. 1) reflected in increased global average of air and ocean temperatures, melting ice and snow and rising sea level. Climate change can also cause the sudden onset of extreme climate events, such as cyclones, floods, hurricanes, typhoons, heat waves, forest fires and epidemics (IPCC 2001, 2007; Stern Review 2006). It is also suggested in the literature that climate change may lead to declining precipitation resulting in soil moisture reduction and recurrent droughts, land degradation, desertification, deforestation, aquifer depletion and water scarcity.

Governments, inter-governmental and non-governmental organisations, environmental groups, NGOs and some academics claim that the above-enumerated effects of climate change will cause severe conditions of resource scarcity and mass distress, internal and external displacement. These are said to trigger violent conflict both at origin and destination. It is further claimed that the negative effects of the reduction of the supply of environmental resources is likely to be more dramatic in societies where livelihood systems are directly dependent on environmental resources, such as land, water, pasture and forest resources as is the case in the Horn of Africa. By the same token, the effect of climate change is said to be less dramatic in the developed world where sources of livelihoods are more diversified and the technology in use is more advanced. This enables Western societies to build their adaptive capacities in order to offset, cope with or adapt to the changes precipitated by climate change.

Although the debate on the climate change-migration-violent conflict nexus pervades the relevant literature and public debate, such deterministic claims still re-

1 VOA News. Text of President Obama's speech to Ghana's parliament. Retrieved Tuesday, July 14, 2009 from http://www.voanews.com/english/2009-07-11-voa6.cfm

main highly contested and largely unproven. The proponents of this view argue that those whose livelihood security is eroded by resource scarcity resulting from climate change are forced to abandon their places of origin in search of arable land, water and/or pasture (see Norwegian Refugee Council 2008). When they encroach on other people's territory and assuming the resources in that territory are scarce, under pressure or are inundated by sudden increase in demand, the risk for violent conflict increases. Alternatively, people whose sources of livelihood are undermined by climate change will engage in fierce competition and in the worst case scenario in violent conflict in an attempt to gain exclusive access and use of the remaining resources in the areas of their origin (Gleditsch, Nordås and Salehyan 2007).

What the proponents of this view overlook is the fact that the effect of climate change on violent conflict is mediated by a range of political, social and ecological factors. Armed conflict is by definition multi-causal. It is the result of interplay between different social, economic, political and environmental factors. This suggests that climate change is only one of the multiple causes of conflict (Barnett and Adger 2007) and it is therefore difficult, if not impossible, to isolate it from the other inextricably interwoven factors that contribute to conflict. The complexity and the ambiguity of the relationship between climate change, migration and conflict, as well as the dearth of solid empirical evidence on such relationships have not deterred or discouraged some governments, intergovernmental and non-governmental organisations, activists, as well as a few academics from making dramatic claims which in the context of the current state of knowledge cannot withstand rigorous empirical scrutiny.

For example, the 2001 IPCC report (2001: 225) stated, "reduced water availability may induce conflict between different users." This according to the report is more likely in the semi-arid savannah ecosystems of tropical Africa which may prompt new conflicts or may exacerbate pre-existing ones between herdsmen and farmers (IPCC 2001: 394). The report further states that climate change may also diminish fish stocks and this may trigger inter-state conflict as it constitutes trans-border economic resource like water in many countries (IPCC 2001: 396). The German Environment Ministry stated, "evidence is mounting that the adverse effects of climate change can, particularly by interaction with a number of socio-economic factors, contribute to an increasing potential for conflict" (2002: 4).

In 2003, a report to the US Department of Defence by Schwartz and Randall painted a bleak picture warning states of apocalyptic future scenarios resulting from dramatic climate change. They stated, "We have created a climate change scenario that although not the most likely, is plausible and would challenge United States national security in ways that should be considered immediately (2003: 1)." The report further stated:

> "…an abrupt climate change scenario could potentially de-stabilise the geopolitical environment, leading to skirmishes, battles and even war due to resource constraints such as: food shortages due to decrease in net global agricultural production; decreased availability and quality of fresh water in key regions due to shifted precipitation patterns, causing more frequent floods and droughts; and disrupted access to energy supplies due to extensive sea ice and storminess" (2003: 2).

In a less dramatic manner, the Stern Report stated, "…higher temperatures will increase the chance of triggering abrupt and large-scale changes that lead to regional disruption, migration and conflict" (2006: 56). In 2007, 11 retired US generals and admirals stated: "Climate change can act as a threat multiplier for instability in some of the most volatile regions of the world" (CNA 2007: 1). In April 2007, the issue of climate change was debated in the UN Security Council and was effectively placed on the security agenda (UN 2007). Margaret Beckett, the former British Foreign Secretary, went as far as stating that climate change lies at "… the very heart of the security agenda" (UN 2007). The UN Secretary-General Ban Ki Moon also claimed:

> "Almost invariably, we discuss Darfur in a convenient military and political shorthand—an ethnic conflict pitting Arab militias against black rebels and farmers. Look at its roots, though, and you discover a more complex dynamic. Amid the diverse social and political causes, the Darfur conflict began as an ecological crisis, arising at least in part from climate change. …It is no accident that the violence in Darfur erupted during the drought" (2007).

Soon after the Security Council debate, the neo-Malthusian scholar, Thomas Homer-Dixon, in a provocatively titled piece – "Terror in the Weather Forecast" – published in New York Times, argued, "Evidence is fast accumulating that, within our children's lifetimes, severe droughts, storms and heat waves caused by climate change could rip apart societies from one side of the planet to the other" (2007). He further argued that the threat to international security posed by climate change is "…just as dangerous – and more intractable – than the arms race between the United States and the Soviet Union during the cold war or the proliferation of nuclear weapons among rogue states today" (ibid.) To further dramatise his extraordinary claim, Homer-Dixon stated, "…last week a panel of 11 retired generals and admirals warned that climate change risks "exacerbating conditions that lead to failed states… the breeding grounds for extremism and terrorism" (ibid.). In Homer-Dixon's view, climate change will produce "military challenges, such as insurgencies, genocide, guerrilla attacks, gang warfare and global terrorism." Because of climate change, "…people migrate in large numbers to regions where resources seem more plentiful, only to fight with the people already there. Or they migrate to urban slums, where unemployed young men can be primed to join criminal gangs or radical political groups" (ibid.).

Such extraordinary claims do not make any sense in view of the fact that people in the Horn have moved throughout their history from resource scarce to resource abundant areas without necessarily fighting with the people who were already there. Whenever disputes arose, they were settled before they escalated to armed conflict using long-standing traditional institutions of dispute resolution. It is the breakdown of such institutions and the feebleness of the state regulatory power that replaced them rather than the encroachment of migrants on other people's territories that lie at the heart of most resource-based localised conflicts in the Horn of Africa.

Christian Aid claims that in Africa alone, climate change could kill up to 184 million people before the end of the 21st century. It has also predicted that climate change could cause the displacement of at least one billion people (2006, 2007). The problem with such predictions is that inasmuch as they deal with the future, they remain speculative because the future is essentially unpredictable and uncertain. As a result,

although such extraordinary predictions may contribute to public awareness with regard to the major challenge climate change poses, especially to livelihood systems dependent on environmental resources, their contribution to the actions that need to be taken to mitigate the negative impacts and to adapt to the changes is limited.

In October 2007, Al Gore and the IPCC won the Nobel Peace Prize for their contribution to the debate on climate change and human security in which the Nobel Committee stated:

> Extensive climate change may alter and threaten the living conditions of much of mankind. They may induce large-scale migration and lead to greater competition for the earth's resources. Such changes will place particularly heavy burdens on the world's most vulnerable countries. There may be increased danger of violent conflicts and wars, within and between states (excerpt from the Nobel Committee's motivation for the award of the 2007 Nobel Peace Prize quoted in Norwegian Refugee Council 2008) (emphasis added).

As the Norwegian Refugee Council's report – Future Floods of Refugees: A comment on climate change, conflict and forced migration – correctly points out, the environment is only one of multiple interconnected causes of conflict and more importantly, it is "rarely considered the most decisive" (2008). The report indirectly rejects the Nobel Committee's claim that climate change could cause violent inter-state conflict and states that most conflicts that involve environmental element tend to be intra-state rather than inter-state. This is consistent with Baechler's findings in which it is stated that environmental factors do not, as yet play a part in open conflict between states (1999).

How Certain are the Causal Links?

Notwithstanding the dramatic claims made by the UN, inter- and non-governmental organisations and a few academics as seen above, many analysts warn against taking the causal links between climate change, migration and conflict for granted. For example, Baono et al (2008:20) argue, "It is necessary to be very cautious about the links for there is little solid empirical research and many weak normative assumptions" (see also Kibreab 1994, 1997). According to Nordås and Gleditsch (2007) hitherto the claims concerning the security implications of climate change have been largely based on speculation and questionable sources. They further state that in spite of its rigour in other areas, the IPCC's commentary on the relationship between climate change and conflict is based on unreliable second-hand data. The dramatic claims notwithstanding, Barnett and Adger (2007: 644) argue that climate change "…will not undermine human security or increase risk of violent conflict in isolation from other important social factors." Raleigh and Urdal (2007: 687) argue, "demographic and environmental variables only have a very moderate effect on the risk of civil conflict." According to Idean Salehyan, the findings of serious research on

climate change and conflict show, "…direct links are few and weak; causal pathways are complex and contingent on a host of additional factors" (2008: 316). Salehyan further argues that whilst members of the academia exercise caution regarding the links between climate change and conflict, policy activists in an attempt to encourage remedial action "…continue to make dire predictions about looming 'resource wars' often basing their arguments on speculation or shoddy research" (Ibid.: 217).

There are analysts who argue that abundance rather than scarcity of resources lies at the heart of violent conflict in resource rich countries. After the end of the Cold War, in the countries endowed with rich mineral resources such as Angola, the Democratic Republic of Congo, Sierra Leone and Colombia, war is pursued to control mineral resources as a means of enrichment of leaders of warring parties rather than as a means of resolving a conflict (see the burgeoning literature on this, e.g. de Soysa 2000; Azam 2001; Azam and Hoeffler 2002; Collier 2000; Collier and Hoeffler 2001; de Soysa 2002; Skaperdas 2002; Ballentine and Sherman 2003; Fischer and Schmelzle 2004; Le Billon 2005).

There are an increasing number of scholars who argue, that conflict is caused by 'greed' rather than 'grievance' and that a relative abundance of natural resources supplies constitutes the motivation for organising violence. "Resources offer lootable income over which to fight, making costly strategies of violence viable…" (de Soysa 2000, 2002; Collier 2000; Ross 2003; Global Witness 1998; 2004). Some analysts argue that it is more fruitful to conceive greed and grievance as being causally linked and mutually reinforcing (Korf 2005).

The simplistic view that climate change will lead to open warfare is unwarranted and lacks empirical backing. Therefore, it is wrong to take the relationship between resource scarcity caused by climate change and violent conflict for granted. This is because people's response to environmental change is dependent on a variety of factors, such as individual and community adaptability and resilience of their coping mechanisms, livelihood opportunities and sensitivity and resilience of resources to climate change. How climate change impacts on conflict is mediated by a range of inextricably interwoven factors including the effectiveness of traditional institutions not only in the regulation of access to and use of resources, but also in inculcating and enforcement of social norms of community values among their members.

The simplistic claim that climate change leads to open warfare also ignores the vital role state institutions can play in the management and redistribution of resources, as well as in mediating conflict (Salehyan 2008). Conflict is never mono-causal. The multi-causal nature of violent conflict makes it almost impossible to attribute causality directly to climate change. As Idean Salehyan argues, the deterministic view that climate change causes open warfare is dubious because it "…ignores human agency, ingenuity, the potential for technological innovation, and the vital role of political institutions and policy prescriptions" (2008: 317).

Because of the multi-causal nature of most armed conflicts, it is almost impossible to isolate and show the significance of the environment. In spite of this difficulty, however, it is important to recognise that the environment is often part of a complex and mediated relationship, but exactly how it interacts with other factors to engender

violent conflict still remains unclear. For example, Barnett and Adger argue (2007), "It is important to underscore that climate change alone does not undermine human security or increase the risk of violent conflict in isolation from other important social factors."

Climate change only contributes to armed conflict in conjunction with many other factors, such as poverty, poorly defined and ineffectively enforced property rights regimes, institutional vacuum created by weakened or non-existent traditional resource management systems and institutions of dispute resolution, breakdown of state regulatory institutions, over-dependence on environmental resources for livelihoods, high population density and income inequality. Nevertheless, it is important to underscore the fact that none of these factors operate in isolation from each other. Barnett and Adger argue that human insecurity may increase the risk of violent conflict because people who feel unsafe or insecure are more likely to join armed groups and engage in violent conflict (2007: 646). Violent conflict may also exacerbate resource scarcity and consequently lower the cost of joining armed groups by those whose livelihoods are eroded as a result. Violent conflicts also weaken states by eroding their capacity to provide social services and relief, as well as to regulate access to resources and to mediate conflict.

The role poverty plays in climate change-induced armed conflict is far from straightforward. On the one hand, because poor people are excessively pre-occupied with the task of finding their daily bread, a slight misallocation of their scarce resource – family labour – may have life threatening consequences. Poor people's response to climate change may therefore be characterised by risk avoidance. As a result, poor people may be reluctant to participate in armed conflict. On the other hand, it can be argued that because the opportunity cost of war to poor people is low, they may have an incentive to participate in war to gain access to scarce resources through looting, armed robbery and cattle raiding (see Meier, Bond and Bond 2007).

In fact, there is evidence to show that most participants in civil wars are young men who have no stake in the status quo and "whose hope for a better future is frustrated by contraction in their livelihoods" (Ohlsson, quoted in Barnett and Adger 2007).[2] Goodhand also argues that for such young men, participation in armed groups is a rational option for achieving "…some status in society, particularly when leaders are able to ascribe their poverty to the actions of other (ethnic, political, geographic, class) groups" (2003).[3]

Other relevant factors that interact with climate change to engender armed conflict include dearth of government legitimacy, proliferation of small weapons due to the weakness or breakdown of the coercive powers of the state reflected in inability to control access to weapons and inability to interfere in the management of resource redistribution and mediation of conflict (Reuveny 2007; Barnett and Adger 2007; Gleditsch et al 2007).

2 Ohlsson, L. (2000) Livelihood conflicts: linking poverty and environment as causes of conflict. Stockholm: Environmental policy unit, Swedish International Development Agency.

3 Goodhand, J. (2003) Enduring disorder in persistent poverty: a review of linkages between war and chronic poverty. World Development 31, 629-646

Some analysts argue that the negative impact of climate change can be averted by democratic governance. For example, Sen (1999) argues that countries with democratic institutions and press freedom are able to avoid the risk of famine even in the face of severe environmental resource scarcities. How states manage environmental resources and how they respond to the challenge of climate change is dependent on the extent to which they are accountable to their citizens. Li and Reuveny's (2006) study of the effects of democracy on environmental degradation clearly show that democratic governance enhances environmental sustainability or minimises environmental damage. Their empirical examination of five aspects of human-induced environmental degradation, namely, carbon dioxide emissions, nitrogen dioxide emissions, deforestation, land degradation and organic pollution in water show, "…the difference between autocracy and non-autocracy significantly influences carbon dioxide emissions, nitrogen dioxide emissions, and organic pollution in water, while the difference between democracy and non-democracy significantly affects land degradation" (2006: 953). The important conclusion the authors draw from their empirical study of the relationship between democracy and environmental degradation is that democracy reduces the extent of human activities that directly degrade the environment (p. 953).

The relationship between climate change and armed conflict is as complex and ambiguous as the relationship between climate change and human migration. It is reasonable to assume that those who are faced with the problem of climate change are rational actors and their response will be based on cost-benefit analysis of the different available options. Violence is likely to represent the least desirable and most costly option in terms of loss of income, human life and limbs, destruction of physical capital and foregone opportunities. Violence also does not resolve the problem of resource redistribution unless the adversary is completely decimated which is rarely the case. Fearon (1995 referred in Salehyan 2008: 317), for example, argues, "Violence is an inefficient and costly way to resolve conflicts over resources." Salehyan (2008) also argues that environmental degradation is neither necessary nor a sufficient condition for armed conflict, "since states play a key role in containing or aggravating violence" (2008: 317).

How individuals adapt and respond to climate change is varied depending on their resourcefulness, sources of livelihood, diversity of income sources, opportunity for off-farm income-generation, endowment of social capital and resilience and sensitivity of their coping strategies to climate change. When faced with climate change individuals may adopt one of the following responses, namely, leave the affected areas to relocate themselves to less affected areas of the country concerned, move to a neighbouring country in search of livelihood, invest in technological innovation, develop soil and water conservation to counter the negative effects of degradation on texture, structure and soil fertility and to maximise retention of moisture (Salehyan 2008).

The tragedy that has been unfolding in Darfur since 2003 is often cited by governments, inter-governmental and non-governmental organisations, as well as some analysts to show the alleged undeniable relationship between resource scarcity caused by environmental degradation and violent conflict. However, as will be briefly dis-

cussed in what follows, the cause of the Darfur conflict, as well as the factors underlying degradation of the resources are far more complex than what tends to be commonly assumed.

The Darfur Tragedy: Is the Environment to Blame?

The tragedy in Darfur is often mentioned as evidence to show how climate change interacting with other factors can decimate sources of livelihoods, such as arable land, pasture, water and forest resources prompting cut-throat competition between sedentary farmers and pastoralists, as well as commercial farmers who engage relentlessly in agricultural land grabbing, further exacerbating the already over-stressed livelihood systems. A study conducted by UNEP in 2007, for example, argued, "In Sudan desertification is clearly linked to conflict, as there are strong indications that the hardship caused to pastoralist societies by desertification is one of the underlying causes of the current war in Darfur" (p. 58). According to UNEP, in Darfur the link between desertification, land degradation and conflict is indisputable and this is reflected, the report argues, in the south-ward movement of the boundary between the desert and semi-desert due to reduction of precipitation. The culprit in the report is human activity which has stripped the land bare without due regard to its regenerative capability.

The UN University for Peace conference held under the theme – 'Environmental Degradation as a Cause of Conflict in Darfur' (2004) stated that the increase in population causes intensification of cropping and grazing both in the fertile wadi land and in the marginal goz lands with the consequent result of shorter fallow periods which have detrimentally affected agricultural productivity and carrying capacity of the land. In order to make up for the loss of soil fertility, larger areas are needed to meet the needs of humans and livestock. The demand on renewable resources is further exacerbated by increased demand due to higher population density of humans and animals. The net result of these changes is said to be that farmers and herders compete for access to shrinking resources which leads to conflict (referred in Tearfund 2007: 20).

It is worth noting that there is a neo-Malthusian streak underlying the reasoning of the University for Peace's conference proceedings in which it is assumed that higher population density in Darfur has led to resource scarcity, which resulted in fierce competition for dwindling resources, which over time led to violent conflict. Although higher population density may under some circumstances lead to resource scarcity, it is wrong to assume that this would lead to violent conflict. Neo-Malthusian theorists assume that population growth is an important source of natural resource scarcity and societies experiencing such scarcity are likely to under-perform in terms of food production and overall economic development. Consequently, they are assumed to face an increased risk of domestic armed conflict. In his empirical study on

the relationship between population growth and armed conflict, Henrik Urdal found no "strong empirical support for neo-Malthusian concerns" (2005: 430). He pointed out, "Countries experiencing high population growth are generally not experiencing a greater risk of conflict compared to countries with low levels of population pressure" (ibid.).

Contrary to the neo-Malthusians' unsubstantiated claim that resource scarcity leads to conflict, there is evidence to show that societies faced with resource scarcity instead of killing each other may cooperate with one another in search of a common solution to a common problem as postulated by the Boseruptian hypothesis. Henrik Urdal's empirical study shows that land scarcity, instead of fuelling conflict, engenders willingness and determination to cooperate in search of a cooperative solution. He states, "There is some support for 'cornucopian' expectations that scarcity of potentially productive land is associated with a decreased risk of armed conflict. These results generally back up a development scheme proposing that densely populated areas are forced to develop in order to overcome resources scarcity, thereby eventually reducing the risk of conflict" (2005: 430).

There is need to rethink the deterministic and simplistic plethora of assertions made by governments, inter-governmental and non-governmental organisations in connection with the Darfur tragedy. As we saw earlier, the UN Secretary-General, Ban Ki Moon, has referred to the conflict in Darfur as stemming from ecological crisis (2007). The fundamental weakness of the explanations that attribute the Darfur tragedy to climate change and the consequent resource scarcity and the deadly competition that followed between the sedentarist farmers and pastoralist groups ignore the counterproductive role played by consecutive Sudanese governments not only in terms of their propensity to intervene militarily instead of seeking political solutions to political crises, but also more importantly in their systematic and deliberate erosion of the long-standing traditional institutions that regulated access and use of resources within the respective tribal homelands or Dars.

The present crisis in Darfur or elsewhere throughout Sudan can only be understood in the context of the institutional changes and transformations that began with the promulgation of the Unregistered Land Act in 1970 which converted all unregistered land to state property and the 1971 People's Local Government Act which abolished the Native Administration in the country.

In the following, drawing heavily on my book – State Intervention and the Environment in Sudan, 1889-1989: the Demise of Communal Resource Management (2002). I will briefly show that at the heart of the Darfur crisis lies the respective Sudanese governments' interventions that effectively destroyed the long-standing institutions and enforcement mechanisms which promoted cooperative use of scarce resources, such as arable land, water and browsing resources, especially in the northern provinces of the country.

The concept of Dar and the rights enshrined in it are fundamental to the proper understanding of property rights as well as to the system of resource management among the pastoralists and traditional cultivators in northern Sudan. Justice Hayes who worked as a high court judge in Sudan between 1944 and 1953 after hearing a

great deal of oral evidence concerning the traditional and customary conception of Dar rights and collecting extensive corroborating evidence defined Dar rights as follows:

> If I had to declare what these [Dar] rights comprise, I should have said that, where there is no settled government outside the Dar and with authority over it, Dar rights are almost the same as the right of sovereignty, the only substantial difference from normal State sovereignty being that, with the nomads, boundaries are drawn with less precision. ..The principal rights brought to my notice, apart from rights of normal uses, were:
>
> The right to admit or refuse strangers to water and graze in the Dar, and the right to impose conditions on such entry.
>
> The right to build permanent buildings in the Dar.
>
> The right to cultivate.
>
> The right to sink new wells, or dig out old ones.
>
> The right to beat the nuggara (drum), and to wasms (tribal symbols or marks) on trees and rocks (quoted in Kibreab 2002: 22).

From the point of view of the Darfur crisis, the single most important feature of Dar rights is their exclusionary nature. Dar rights or the resources located within a tribal territory were common property resources (res communes) in which non-members were denied access and allocation, and the use of rights among members of the Dar rights holders were regulated by customary rules which were enforced rigorously by the traditional leaders, the sheikhs in council and elders. These rules, which were based on old usage and precedent, determined who should use the resources, and who should be excluded from using the resources and how the resources should be used by members of the Dar rights holders. Dar rights were exclusive and sovereign. No other tribe could cultivate, graze or water themselves or their animals in an area belonging to another tribe, except by permission of such a tribe through tribal chiefs or local authorities (see Kibreab 2002: 23, 1996, 2001).

If Dar rights holders gave permission to strangers to enter their Dar, they defined the conditions of how, where, and when they should use the resources. For example, the Dar rights holders could state the number of days strangers could stay, the sites where they could graze and water their animals, etc. Once Dar rights were established, they became incontrovertible (ibid.).

The existence of exclusionary rights was the key to the traditional resource management systems and consequently in the sustainable use of the natural environment. Internal and external pressures posed a threat to proper land use practices in the tribal territories. The role of tribal institutional arrangements was to prevent or offset both external and internal pressures by enforcing rules which guarded against individual excess within the given user community and by excluding outsiders from gaining access to land and other CPRs within their territories. In this way, a balance was maintained between human/animal numbers and the available natural resources. One of the most important objectives of the tribal institutional arrangements was to maintain equilibrium between the potential for environmental regeneration and the demands placed on it (ibid.: 24).

During the reign of the Condominium, Dar rights, including the customary laws that regulated access and use were recognised. As far as possible, the Anglo-Egyptian government aimed at restoring the structure of land ownership to what it had been

before the Mahdist period (ibid.: 37). Whenever climatic conditions required movement outside one's Dar or tribal homeland, which was a common occurrence in view of the great variation in the environment even within short distances, the tribes in the different Dars negotiated with each other to gain entry and to spell out the conditions of access and use of resources.

The conditions of entry included details about timing, routes to be taken, time to be spent en route, location and level of intensity of resource use to protect degradation-prone sites, to ensure the right of priority of Dar rights holders and to facilitate enforcement of inter-tribal agreement. Such agreements were also designed to minimise inter-tribal agreement.

Most traditional institutional arrangements were enforceable at law, i.e. if any of the parties to the agreement failed to observe the terms of the agreement and if traditional arbitration were of no avail, redress could be sought from the government. Based on extensive archival material collected from the Sudan National Records Office, I examined in great detail a number of inter-tribal agreements, e.g. between the Kababish and Jumuiya, the Kababish and Hawawir, the Malwal Dinka and Rizeigat, as well as the Kababish and the northern Darfuri tribes of Meidob, Berti and Zayyadia (Kibreab 2002).

For our purpose, the most interesting inter-tribal agreements were the ones between the Fur sedentarist farmers, the Meidob, Berti and the Zayyadia v. the Arab Kababish. Even during the Condominium period, raiding, conflicts and blood feuds characterised the relationship between the Kababish tribe and the three tribes of northern Darfur. For example, in spite of the heavy-handedly enforced Dar rights by the Condominium government, between 1918 and 1939, eleven confrontations resulting in loss of lives, property and physical injury took place between the Meidob and sections of the Kababish.

The disputes were not only caused by competition over grazing and watering grounds, but also by unwillingness on the part of the pastoralist Arabs—the Kababish –to recognise the property rights of the northern Darfuri tribes. Sheikh Ali al-Tom's and his people's attitude was that the area in question was an open-access resource by virtue of God's and the government's will. But the reign of God did not seem to extend to their Dar because the Kababish jealously protected their Dar rights against any form of encroachment from their neighbours.

The Condominium government was, however, determined to bring to an end the incessant resource-based conflicts by fixing the grazing and territorial boundaries which they expected both parties to respect and observe (Kibreab 2002: 101). On 12 and 13 July 1946, a meeting of the representatives of the Kababish and Kawahla tribes of northern Kordofan District and representatives of the Meidob, Zayyadia and the Berti tribes took place in Mahla in the presence of the district commissioners of Dar Kababish and Northern Darfur District.[4]

4 The Kababish were represented by Sheikh Hassan Ali al-Tom, Nazir Umum of Kababish; Sheik Mohamed Ali al Tom, Wakil Nazir Umum of Kababish; Sehik Ibrahim Ali al Tom, Kababish Wakil for Northern Darfur and the Kawahla were represented by Sheik Mohamed Fadlalla El Eisir, Nazir of the Kawahla tribe. The tribes from Northern Darfur were represented by Magdum Yusef Mohamed Sharif; Malik Mohamed Sayah, Malik of Meidob; Sheikh Juzzur Idris, Nazir of

At the meeting, the Kababish were forced by the government to abandon their vindictive position and to seek permission from the representatives of the Meidob, Zayyadya, and Berti for members of their tribesmen to graze their animals to the west of the grazing boundary during that year. This amounted to outright acknowledgement by the Kababish of the power (property rights) of the three Darfuri tribes to deny them access to resources located within their territories.

The Effect of Nationalisation of Unregistered Lands

After 1970, mechanised rain-fed agriculture, with its low capital input requirements and tempting short-term high yields became too tantalising and irresistible to those who stood to gain. Thus, a policy to develop the central clay plains was adopted as the centrepiece of the government's agricultural development strategy. It was hoped that expansion of rain-fed agriculture would dramatically increase agricultural production enabling the country not only to become food secure but also to be the bread basket of the Middle East (Kibreab 2002: 277, see also Kibreab 1996, 2001).

Not only did this vision become more compelling over time, but also the people in power thought that this goal would not be achieved without a fundamental institutional change and transformation of the historically evolved property rights regimes of the various resource users in the country. It was thought that such a measure would give the managers of the state unfettered powers to allocate the country's basic resource – land – to activities which could potentially generate more revenues to investors, the public treasury, and consequently to themselves. The only way the government could do this was by changing the long-standing, customarily prescribed and socially sanctioned communal property rights regime to a state property rights regime.

This was accomplished when the government enacted the Unregistered Land Act in 1970 which stipulated,

> …all land of any kind whether waste, forest, occupied or unoccupied, which is not registered before the commencement of this Act, shall, on such commencement, be the property of the government and shall be deemed to have been registered as such…" (quoted in Kibreab 2002: 278)

The impact of this legislation on the country's system of land tenure and consequently on the environment and violent conflict was dramatic. After the 1970s, all the renewable resources, including land which previously was under the control of the pastoralists and farmers, save the arable lands in the riverain areas which were registered as private holdings, and nearly all the natural resources such as forests, rangelands, wastelands, etc. came under government ownership. About 95% of the

Zayyadiya; and Shartai Ahmadai Adam Tamin, Shartai of Berti (in Kibreab 2002: p. 126, endnote 146).

country's total amount of land and natural resources were unregistered (Abu Sin in Kibreab 2002: 280).

The ULA 1970 eliminated the exclusionary nature of Dar rights and by doing so removed the most critical element, which underpinned the traditional resource management institutions throughout the country. This overnight change of the long-standing institutions shook the edifice of the foundation on which land use practices and land rights developed since time immemorial throughout the country, including in northern Darfur rested.

The Unregistered Land Act, 1970 was enacted in the context of a weak state, which lacked the ability to enforce its own laws or institutional arrangements due to lack of financial, administrative, manpower and political will. Some of the negative impacts of the institutional changes in terms of property rights regimes introduced by the promulgation of the Unregistered Land Act, 1970 are discussed in the following.

1) Weakening of traditional resource-regulating institutions

The enactment of the Unregistered Land Act, 1970 marked the demise, on the one hand, of the traditional resource-regulating institutions and, on the other, of the hierarchical hereditary leadership structures. The traditional resource-regulating institutions were developed in response to the need to govern access to, and use of, scarce resources within the Dars. The tribal hierarchical leadership structures were also developed, inter alia, to enforce the resource-regulating institutional arrangements that provided a framework for prudent and sustainable use of the resources used in common. These institutions and their enforcement were based not in formal legislation or statutes, but on customs, moral pressures, taboos and kinship relations.

The traditional tribal leaders therefore played a key role in enforcing the institutional rules, negotiating inter-tribal settlements, in supervising resource users' behaviour within the areas of their authorities and in arbitrating disputes regarding access to, and use of, scarce resources. At the time their authority came under pressure, from the mid-1920s onwards, the policy of devolution of judicial, administrative, and executive powers provided vital underpinning to reinforce their powers and positions in society.[5] Most importantly, the Dar rights in the tribal homelands were also further fortified due to the fact that the various tribal territories constituted distinct geographical units on which the system of Native Administration was based. Dar rights therefore represented the foundation on which the system of Native Administration rested (Kibreab 2002: 283).

Because of the ULA, 1970, the rights of the tribes and their traditional leaders were reduced to the right of insecure usufruct. This dealt an annihilating blow to the authority of the tribal organisations. Their role in devising institutional arrangements for the regulation of resource allocation, use and enforcement was sub-

5 See the Powers of Nomad Sheiks Ordinance, 1922; The Powers of Sheikhs Ordinance, 1927; The Chief'

stantially weakened. The long-standing traditional resource-regulating institutions also became non-functional when the resources within the Dars became government property. Following the loss of local control of resources, the principles of respect for traditional authority, solidarity, co-operation, moral restraint, collective discipline, etc. gradually gave way to individualism, competition, free-riding, lack of restraint and anarchic use of the resources which, de jure, had become government property. In the absence of intensive supervision and policing, the outcome was resource depletion, fierce competition in which every individual or group craved to maximise his/her benefit disregarding communal interests (Kibreab 2002, Chapter 8). At the heart of the Darfur crisis lies the destruction of the traditional institutions of resource management by political means. This was exacerbated by militarised state intervention whenever a political problem arose in the region.

2) Conversion of Dar Rights into de facto Open Access Resources

In the pre-1970 period, land and the related CPRs within the distinctively defined tribal territories – Dars – were exclusive property rights accessible chiefly to the Dar rights holders. The socially recognised group or the rights holders had customarily prescribed and socially sanctioned rights to permit or refuse entry to outsiders. It was this power to limit the ability of non-members to gain access to resources located within the distinctively defined tribal territories that constituted the edifice of the foundation on which the conception and practice of property rights rested. Outsiders were excluded and required special permission to enter and use resources within the Dar under carefully detailed conditions.

When Dar rights were abolished, it was no longer possible to exclude non-members and the government depending on its interest condoned, encouraged, initiated or tolerated the encroachment by some tribes on other tribes' territories, e.g. the Herder Arabs' violation of the territorial rights of the tribes in northern Darfur. In effect, the previously exclusive resources became open access where entry is unlimited and use unregulated and the outcome was predictable and hence, inter alia, the tragedy in Darfur.

The following are some of the consequences of the conversion of the previously communally managed resources into de facto open access resources:

a) Access without control: after the ULA 1970, the pastoralists and farmers continued to have access to grazing, arable, woodlands, and river resources over which they lacked control. This had three deleterious consequences. First, the resources became open to outsiders who were no longer bound to observe any rules regarding access to and use of the resources. Secondly, lack of control meant that people no longer felt responsible to use the resources sustainably. Thirdly, unlimited entry and absence of regulatory rules led to fierce competition sometimes resulting in armed confrontation between pastoralists and farmers (Kibreab 2002: 291).

b) Ethnic intermingling: after the conversion of the former exclusive resources into de facto open access resources, the previously strictly defined territories occupied by the different tribes and sections of the tribes in the various Dars disappeared, leading to tribal inter-mingling. The consequences of this were, firstly, the new influxes of people and animals exerted additional pressures on pasture, water, vegetation and other resources, thereby upsetting the balance between the number of users and available resources. Secondly, the intermingling of different tribal groups with different behavioural and patterns of resource use, knowledge and institutions had a detrimental impact on the environment and local peace.

c) Institutional vacuum: the government was unable to create an institutional framework and mechanism for allocation, regulation and enforcement of the newly created property rights regime. As a result of the institutional vacuum, chaos and confusion set in and commercial farmers encroached upon farmers' and pastoralists' lands and pastoralists encroached on farmers' territories on the grounds that all land belonged to the government and therefore to all Sudanese regardless of their ethnic and geographical origin. Like a Pandora's Box, the ULA 1970 discharged various actors who competed avariciously for uncontrolled access to, and use of, scarce arable, grazing, woodland and water resources.

d) Conflicts between commercial farmers, pastoralists and small farmers: one of the consequences of the conversion of the tribal territories (Dars) into de facto open access resources has been increased frequency of conflicts between nomadic pastoralists, farmers and commercial farmers. Expansion of mechanised farming is the major cause of increased pastoralist-farmer confrontations

Abolition of the Native Administration

The institution of Native Administration was abolished in 1971 as a result of the coming into force of the People's Local Government Act, 1971. Many Sudanese scholars view the abolition of the Native Administration as the single major cause of natural resource depletion and conflict between commercial farmers, pastoralists and farmers (Abu Sin 1989; el Arifi 1979; Mohammed 1990). el Arifi, for example, states that before the system of Native Administration was dissolved, it was responsible, among other things, for organising the use of resources and suggests that its abolition has paved the way for environmental degradation (1979). Ibrahim also argues that until 1971, the Native Administration had functioned effectively in the management of natural resources and its abolition in 1971 had created an administrative vacuum (1989). Mohammad argued in his case study in Darfur that the abolition of native administration constituted one of the main factors underlying the problem of resource degradation (1990).

Although the Native Administration played a key role in the management of land, pasture, water and other renewable resources, as well as in dispute resolution, including resource-based conflict, it is important to realise that the tribal resource-

regulating institutions and the enforcement mechanisms existed long before the advent of the Native Administration or even much earlier before the establishment of colonial rule. For example, Sultan Dali's laws and regulations in Darfur during the 17th century were devised and enforced to protect the environment by regulating resource allocation and use (Sin referred in el Arifi 1979). el Arifi, for example, notes, "…Sultan Dali's laws and regulations were perhaps the best example of codes passed and reinforced with intention of protecting resource-use in Darfur in the seventeenth century. Such laws or traditional land-use were meant to create equilibrium between human demand and the capability of the environment" (1979: 36).

Conclusion

The literature on climate change and human security is based as seen in the paper, on the following simplistic and deterministic assumptions. Firstly, climate change creates resource scarcity. Secondly, if the main sources of livelihood in the affected areas are dependent on natural resources, people will engage in fierce competition and in extreme case scenarios will fight over the remaining resources in order to gain access and control by excluding other resource users. Thirdly, the severe scarcity of environmental resources and the conflict that is triggered by such paucity will induce some or all of the affected populations to abandon their places of origin and become either internally displaced or cross international borders. If the area they emigrate to or flee from is affected by conflict, those who cross international borders may be considered as de facto refugees. Fourthly, those who are displaced due to resource scarcity or conflict caused by climate change will encroach on other people's territories. This will lead to violent conflict in the receiving areas—namely, in the areas of internal displacement or in the surroundings of refugee camps, settlements or self-settlements.

As seen throughout the paper, the evidence on the link between resource scarcity and violent conflict in spite of the extraordinary claims made by governments, intergovernmental and non-governmental organisations and some analysts, still remains weak, impressionistic, simplistic and deterministic and therefore cannot generate data that can be the basis for evidence-based policy formulation.

As highlighted in the brief case study of the Darfur crisis, conflicts only occur where: (1) resource scarcity is combined with weak institutional and enforcement capacity; (2) pre-existing institutions or property rights regimes are undermined or wiped out politically as in the case of Sudan through ill-thought out institutional changes; (3) government intervenes directly or through its agents, e.g. militias, militarily to suppress demands for justice, equality and dignity; (4) a government or its agents' deliberately use the systematic destruction of crops, farm and grazing lands, as well as the poisoning of wells as instruments of political repression; and (5) gov-

ernments provide arms to one group in order to sow dissension or weaken another group.

Violent conflict is likely to take place in a situation where firstly, institutions or property rights regimes are poorly defined or non-existent; secondly, conflicts may also occur when a state introduces institutional changes which it cannot enforce and as a result, chaos ensues due to the institutional vacuum created by such changes.

Another major weakness in the available literature concerning the climate change-migration-conflict nexus is the undue emphasis placed on resource scarcity and violent conflict to the complete neglect of the linkages between resource scarcity and peace. There is no obvious reason why it should be assumed that rational people faced with acute resource scarcity will kill each other rather than cooperate with each other. When resource users face conditions of severe resource scarcity, they may either cooperate in search of a solution or may try to eliminate the other in order to gain exclusive access to a scarce resource. However, since the possibility of completely wiping out the 'Other' is farfetched, violence does not represent an efficient solution to resource scarcity. Cooperation rather than violence is a more natural and efficient option. In spite of this, in the available literature, the obvious linkage between resource scarcity and peace is rarely explored.

In the Horn of Africa, people have always faced resource scarcity due to the arid and semi-arid nature of the environment they inhabit. These scarcities instead of engendering violent conflict have more often than not prompted cooperative solutions. This is logical in the sense that people who eke out a meagre existence are forced to cooperate in order to overcome resource scarcity and consequently reduce the risk of conflict. Had the populations of the Horn fought against each other to overcome resource scarcity, there would have be no people in the region by now.

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Integrating the Environmental Components of the Darfur Conflict into the Darfur Peace Agreement

Markus Böckenförde

Is climate change the culprit in Darfur? In an editorial published in the Washington Post in June 2007, UN-Secretary General Ban Ki-Moon provocatively identified an ecological crisis and climate change as the underlying cause of the disaster in Darfur.[1] Almost a year later, French President Nicolas Sarkozy reiterated this message during the meeting of the 16 "major economies" and warned their representatives that global warming could lead to more such conflicts.[2] Apparently, in desperate attempts to convince world community of the pressing need to take the challenge of climate change seriously, statesmen do not shy away from oversimplifying the causes of the crisis in Darfur by scapegoating an impersonal agent (climate change) as a dominant root cause of the conflict.

Environmental factors do not inevitably lead to violent confrontation and cannot on their own account for armed conflict. Although they contributed to the situation, the conflict in Darfur is not to be classified an environmental one. Instead of a consecutive line of events in which population pressure and climate change create resource scarcity and environmental degradation and in turn violent competition for resources, the case of Darfur was challenged with the concurrence of significant additional factors, among others governmental marginalisation, ill-managed reforms, bad government, incitement of an "ethnic" conflict, proxy war, etc. [3]

Setting the manifold causes into context becomes a necessary prerequisite in the search for adequate models for how the environmental elements can be suc-

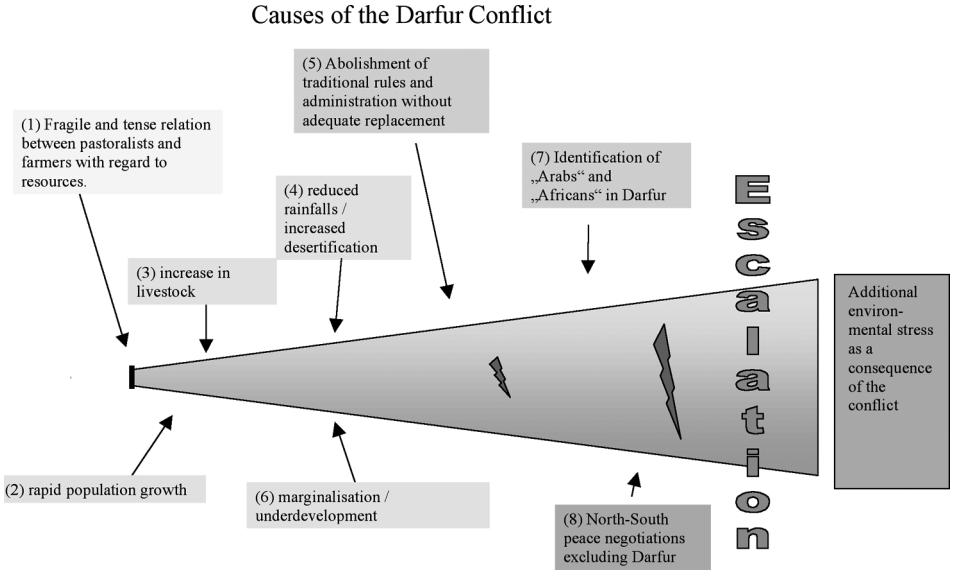
1 Ban Ki Moon, A Climate Culprit in Darfur. In: Washington Post, 16 June 2007, A 15; available at http://www.washingtonpost.com/wp-dyn/content/article/2007/06/15/AR2007061501857.html (accessed 15 July 2009).

2 The "Major Economies" comprise 16 states that account for 80 percent of the world's emissions of greenhouse gases (Australia, Brazil, Canada,China, European Union, France, Germany, India, Indonesia, Italy, Mexico Russia, South Africa, South Korea, UK, USA). AFP, Climate Change Driving Darfur Crisis: Sarkozy (18 April 2008); available at http://afp.google.com/article/ALeqM5h7l_NjlMjZF-QWDOwxIbibX5AEuA (accessed 15 July 2009).

3 Atta el-Battahani, A complex web – Politics and conflict in Sudan. In: Simmons and Dixon (eds), Piece by piece – Adressing Sudan's conflicts, Accord 18 (2006), 13; Declan Butler, Darfur's climate roots challenged. In: 447 Nature (2007), 1038.

cessfully addressed. And although not monolithic, of course, attempts to promote peace in that region will not be successful without addressing the environmental dimension of the conflict. A final Darfur Peace Agreement (DPA) therefore needs to carefully integrate this dimension. It is the purpose of this paper to explore how far the present version of the DPA already accommodates the environmental challenges in Darfur and where it still runs short in integrating them.

The paper consists of three parts: The first part briefly traces the causes that led to the environmental degradation in Darfur; highlights political decisions and other dynamics that further aggravated the potential for conflict; and depicts the augmentation of environmental pressure after the eruption of the conflict in 2004. Part II introduces the immediate initiatives taken against environmental depletion caused by the conflict and frames the prerequisites to be considered for a long term strategy. Part III explores how far the present version of the so-called DPA might already offer a framework that includes the relevant parameters for such a long term strategy.



I. a) Causes of the Darfur conflict

Digging through the layers of causation of the complicated war in Darfur, various factors cumulated to let the catastrophe happen. The brief listing does not intend to weight one cause over another but attempts to highlight the mutual intensification of elements that became responsible for what happened.

(1) Darfur is situated on the edge of a desert in an area suffering both from an overall shortness of resources and a high degree of variability in the availability of resources. This scarcity and variability have required a high level of community management, given that different groups use resources in different ways for their livelihoods.[4] Although partly symbiotic (nomads would pasture their camels on the harvested fields, thus fertilising them, and help the villagers transport their grain to market)[5], especially in years with a shortage of rainfall, disputes were common but had been settled most of the time through traditional mechanisms.

(2) Over the last five decades, Darfur's population grew from just over one million people in the mid 1950s to more than six million in the early 2000s.[6] The increase in population density has put additional pressure on both the sedentary and pastoralist livelihood systems.

(3) Next to the rapid population growth, the livestock population has been fast paced and quadrupled in the last 40 years.[7] Although the relevant data for an estimated increase refer to northern and central Sudan as a whole, it can be assumed that livestock population in Darfur did not deviate from that average rate. In addition to the mere growth in numbers, the disproportionally higher augmentation of sheep and goats created a higher stress for pasture since their way of grazing is less sustainable compared to e.g. camels.

(4) The changing of rainfall patterns reduced productivity. Within the last 50 years, rainfall decreased in northern Darfur by up to 30 %, partly caused through the expansion of the desert southwards by ca. 100 kilometres. Next to the change of climate, deforestation (ca. 30% over the last 30 years) contributed to desertification.[8]

(5) Since the colonial period, successive laws and decrees have undermined the land rights of rural communities, small farmers and pastoralists. However, two legal developments in the 1970s had far-reaching implications on land use. First, the Unregistered Land Act of 1970, in which all unregistered land was transferred to the government and could not be acquired through long-standing use, which encouraged the patronage of land by the government as a means to secure political power. However, government did not have any means to either map or directly manage all unregistered land appropriately.[9] Lack of implementation cre-

4 Brendan Bromwich, Environmental Degradation and Conflict in Darfur: Implications for Peace and Recovery. In: 39 Humanitarian Exchange Magazines (2008), 1. Available under << http://www.odihpn.org/report.asp?id=2805>> (accessed 20 July 2009).

5 Alex de Waal, Counter-Insurgency on the Cheap. In: 26 London Book Review No. 15 (August 2004). Available under << http://www.lrb.co.uk/v26/n15/print/waal01_.html>> (accessed 20 July 2009).

6 Abduljabbar Abdalla Fadul, Natural Resource Management for Sustainable Peace in Darfur. In: University for Peace, Environmental Degradation as a Cause of Conflict in Darfur, 2006, 35.

7 UNEP, Sudan – Post Conflict Environmental Assessment, 2005, 85.

8 Ibid., 205.

9 Mona Ayoub, Land and Conflict in Sudan. In: Simmons and Dixon (eds), Piece by piece – Adressing Sudan's conflicts, Accord 18 (2006), 14.

ated confusion. Many nomads, confused over the land ownership rights, saw an opportunity to settle and gave up traditional nomadism. As a consequence, newcomers, who previously were expected to remain as "guests" of the host tribe and abide by its customary rules regarding land tenure and native administration, established their own administration structures in their new homes since the land they occupied belonged to the government.[10] Second, the Local Government Act of 1971 dismantled traditional authorities and largely transferred their functions to local governments that have limited experience and resources to handle issues such as local conflicts. Thus, control over natural resources has undergone profound relaxation resulting in misuse through deforestation and overgrazing. Additionally, during droughts, governance capacity was missing to address the challenges of migration and conflict. And even if tribal notables stepped in to settle conflict, they were unable to bring a decisive end to it since they lacked the means to enforce the provisions of the settlement. Those (police, army), who could have ensured that compensation was paid and land rights respected remained passive due to governmental lack of will and capacity.[11] In short: successive governments undermined a functioning local administrative and judicial system, but replaced it with a vacuum. A form of governance that could manage the stresses arising from Darfurian's adaptation to their changing environment was missing. With no effective dispute settlement and police force in place, Darfur's communities armed themselves rendering local conflicts more deadly.[12]

(6) In addition, as a reflection of the continuous political and economic marginalisation, Darfur has also suffered from under-investment in infrastructure and services. Lack of education and health services and constrained access to markets restrict the diversification of livelihood opportunities as a means of adapting to the problems caused by environmental degradation.[13] According to the "Black Book", each Darfuri only received 1/5 of the expenditure on development compared to other areas in North Sudan. But also international donors did not pay too much attention to including Darfur as part of their initiatives. The share of projects reaching Darfur amounted to 2% (1958-2003). [14]

(7) The present conflict in Darfur is often characterised as one of 'Arabs' against 'Africans'. Some twenty years ago, such a description would have been incomprehensible in the Darfurian context. Darfur's Arabs are black, indigenous, African and Muslim - just like Darfur's non-Arabs. In Darfur, there have been

10 Musa Adam Abdul-Jailil, The Dynamics of Customary Land Tenure and Natural Resource Management in Darfur, FAO Report on Project OSRO/SUD/507/CAN, 11.

11 Alex de Waal, Is Climate Change the Culprit for Darfur? SSRC-Blog, posted June 25, 2007. Available at: << http://blogs.ssrc.org/darfur/2007/06/25/is-climate-change-the-culprit-for-darfur/ >> (accessed 20 July 2009).

12 Ibid.

13 Bromwich (note 147), 5.

14 Alex Cobham, Cause of Conflict in Sudan: Testing the Black Book. QEH Working Paper Series – QEHWPS121. Available at: << http://www3.qeh.ox.ac.uk/RePEc/qeh/qehwps/qehwps121.pdf>> (accessed 20 July 2009).

at least three meanings of 'Arab'. [15] Locally, 'Arab' was a pejorative reference to the lifestyle of the nomad as uncouth; accordingly, old travelogue reports from "Dinka Arabs", a combination not easily to form on ethnic grounds. Regionally, it referred to someone whose primary language was Arabic. In this sense, a group could become 'Arab' over time. Even if local communities still speak their own language, Arabic is and has been the lingua franca of Darfur for decades. The third meaning of 'Arab' was 'privileged and exclusive'. It was partly introduced by the riverine political aristocracy who had ruled Sudan since independence, and who equated Arabisation with the spread of civilisation and being Arab by descent. Additionally, Libyan Colonel Gaddafi's dream of an "Arab belt" across Sahelian Africa and the formation of an "Islamic Legion" to materialize this dream fuelled this meaning. Darfur's "non-Arab" communities sought a common label for them and decided on "African", again, a label unknown 20 years ago.[16] Western media eagerly took this pair of terms up to put the conflict into perspective, demonising the notion "Arab" as against "African", as they have done in the north-south conflict by invoking the contrast "Muslims" and "Christians". It was not to better understand the specific complexity of the conflict.

(8) At the beginning of the millennium, constant pressure from the international community with the USA at its head led to serious negotiations about ending the civil war between the government in Khartoum and the Sudanese People Liberation Army / Movement (SPLA/M). In June 2002, a framework agreement was reached on the fundamentals of a peace treaty (Machakos Protocol). Although the way was paved to further negotiate for a "Comprehensive Peace Agreement" (CPA), the process was comprehensive in one sense only: it covered the core disputes between Sudan's former national government represented by the National Congress Party (NCP) and the SPLA/M. It was anything but comprehensive from the perspective of the many groups in Sudan that were excluded from the negotiations and side-lined in the political processes accompanying the negotiations. Frustration grew, especially in Darfur. Chances for an end of continuous marginalisation faded.[17] Preparedness to fight violently for an end of marginalisation had gained momentum.

b) Environmental risks as a consequence of the conflict

The outbreak of the conflict, in turn, worsened Darfur's ecological crisis. Environmental degradation is fuelled by additional factors being the consequence

15 Mahmood Mamdani, The Politics of Naming: Genocide, Civil War, Insurgency. In: 29 London Review of Books, March 2007 (No. 5). Available at: << http://www.lrb.co.uk/v29/n05/mamd01_.html>> (accessed 20 July 2009).

16 Alex de Waal, Tragedy in Darfur – on understanding and ending the horror. In: Boston Review Oct./Nov. 2004. Available at: <<http://bostonreview.net/BR29.5/dewaal.php>> (accessed 20 July 2009).

17 Although the CPA explicitly acknowledges peace and stability as aspirations shared by all people of the Sudan, it regards itself only "as a concrete model for solving problems and other conflicts in the country". See Chapeau of the CPA, recital 4 and 9.

rather the cause of it. Massive displacement, the fighting itself, and the need to accommodate the "international community" adequately created additional stress.

- IDP camps are generally situated on the outskirts of towns. Towns in Darfur occur in the wadi plains where the farming is good. The new concentrations of population as a result of the massive displacement also created unprecedented concentrations of demand for natural resources: firewood, timber for construction, sticks and grasses for shelter and water itself.[18] Due to the breakdown of any sort of communal management on forest and other resources, some of the most intensive areas of recent degradation are on prime farmland.[19]
- Natural and physical assets are being destroyed as a feature of the war – farmers' crops are grazed by pastoralists' livestock, rangeland is burnt to prevent grazing and hand pumps are destroyed.[20]
- Next to urbanization through massive displacement, the large and unprecedented presence of the international community as they respond to the humanitarian crisis created a construction boom leading to a surge in brick production. The use of firewood in the brick kilns is the most damaging source of deforestation since it predominantly relies on green wood. [21]

II. Environmental risks, current initiatives and remaining challenges

The environmental challenges and risks in Darfur are manifold, partly deriving from a continuous degradation over the last decades, partly resulting from the imminent demands as a consequence of crisis. This part first informs about those initiatives introduced as an immediate response to the environmental challenges and addresses, secondly, issues that might be worth considering while planning a long-term strategy.

a) Initiatives with regard to immediate environmental challenges

As highlighted above, some of the challenges were intensified through the consequences of the crisis and required immediate attention. Already in 2004, a Rapid Environment Impact Assessment had been conducted by CARE International and

18 Bromwich et al., Darfur: Relief in a vulnerable environment, Tearfund 2007, 23. Available at: << http://workplan.unsudanig.org/mande/assessments/docs/Relief%20in%20a%20vulnerable%20environionment%20final.pdf >> (accessed 20 July 2009).

19 Ibid., 27.

20 Ibid., 22.

21 UNEP, Destitution, distortion and deforestation – The impact of conflict on the timber and woodfuel trade in Darfur, 2008, 5. Available at: << http://postconflict.unep.ch/publications/darfur_timber.pdf >> (accessed 20 July 2009).

the Benfield Hazard Research Center in three IDP camps.[22] It had to assess i.a. the impact of the IDP camps on the environment. The report stated that "Immediate, medium and long term environmental impacts of relief operations have not been systematically considered. Significant negative impacts may occur if mitigation actions are not taken. Available methods, approaches, technologies and capacities to avoid, mitigate or manage environmental impacts are not generally being used in the Darfur crisis."[23] As a response, two projects were initiated, focusing on extended deforestation and water management as part of relief operations.

(1) Extended deforestation

UNEP published a detailed assessment on the impact of conflict on the timber and wood trade in Darfur and provides various recommendations to address the issue.[24]

- Alternative technology: The greatest potential in reversing current deforestation trends is the introduction of alternative brick-making technology that is not firewood dependent. Although not that relevant with regard to deforestation, introducing available techniques to cut the need for firewood for domestic use and bakeries is a further option.
- Alternative crops: It might be worth exploring whether the use of bamboo due to its rapid regeneration capacity might be an alternative
- Alternative materials: Traditional timber constructions could be replaced with metal angle bars and zinc sheeting.

UNDP states further that the international aid agencies should have a duty to assess the environmental impact of their practices, both in terms of their presence in Darfur (buildings and other infrastructure requirements) and in terms of their programming; they should make use of alternative technologies (both construction and energy) as much as possible. Pilot projects should be immediately introduced in order to identify potential negative socio-economic effects of the alternatives.

(2) Water Resource Management

UNEP[25] and Tearfund[26] conducted an analysis on water resource management in the IDPs. Although the last four years provided over average rainfall, it should not be relied on to continue. Drought preparedness plans have been drafted, an Integrated

22 C. Kelly, Darfur Rapid Environmental Impact Assessment, 2004. Available at <<http://www.unsudanig.org/docs/Summary%20Report%20Darfur%20Rapid%20Environment%20Impact%20Assessment%20CARE.doc>> (accessed 20 July 2009).

23 Kelly (note 165), 3.

24 UNEP (note 164), 42 et seq.

25 UNEP, The case for drought preparedness, 2008, available at <<http://postconflict.unep.ch/publications/darfur_drought.pdf >> (accessed 20 July 2009).

26 Tearfund, Water supply in a vulnerable environment, 2007, available at << http://www.tearfund.org/webdocs/website/Campaigning/Policy%20and%20research/Darfur-%20%20Water%20supply%20in%20a%20vulnerable%20environment.pdf >> (accessed 20 July 2009).

Water Resource Management project headed by UNEP and UNICEF is under way.

(3) Other initiatives

Meanwhile, Tearfund introduced a concept note for a study in order to understand the environmental impact of the relief effort and the changes in land use in the conflict, coordinated with i.a. UNICEF, FAO, UNHCR, UNEP. [27]

b) Long-term concepts

Developing long-term strategies addressing environmental degradation in Darfur are incremental for a sustainable peace in Darfur. They need to be addressed in and become a crucial part of a future peace agreement. Important parameters to consider for such a strategy are listed below, before the present Darfur Agreement is tested in how far it already includes them.

As a point of departure, a clear understanding of the chain or web of causes that initiated the environmental crisis is paramount. As trivial as this statement seems, Ban Ki Moon's comments prove the need for its reiteration. Beside the general change of climate during the last decades and the increase of population, the role of other parameters has to be assessed, addressed, and evaluated. Indeed, climate change causes a change in livelihood which is the basis for conflict. And so it was in Darfur. But considering that social institutions can generally handle those conflicts and settle them in a non-violent manner, one might assess why they could not in Darfur. Proper administration and impartial political institutions might have been a crucial element to keep the system operable despite climate change.

Similarly, before introducing long term concepts, one might reassess widely perceived images of environmental change and degradation in African countries. One might carefully identify what elements of local land use practices are indeed destructive to the environment and why they turn out to be so. Is it really the practice as such or rather additional and other interests that interfere? In how far is it possible to modernize existing practices instead of replacing them with unknown consequences for rural people and the natural resource base on which their livelihood often substantially depend?[28] Experiences with new environmental policies and programs introduced through international donor agencies or NGOs turned often out to be at best neutral and at worst deleterious and should be taken seriously.[29]

A long-term concept might also be informed by existing data and information, be it from previous research in Darfur itself or from experiences elsewhere in the Sahel.

27 Bromwich, Darfur Environment Study – Concept Note 2009. Available at: <<http://darfurjam.unsudanig.org/trackII/data/cluster/development/Darfur%20Environmental%20Study%20concept%20note%20(Tearfund).doc>> (accessed 20 July 2009).

28 See Melissa Leach & Robin Mearns (eds). The Lie of the Land: Challenging Received Wisdom on the African Environment. Oxford 1996.

29 Melissa Leach & Robin Mearns, Environmental Change and Policy. In: (see note 171), 441.

In south and west Darfur, the Sudanese Government set up the Western Savanna and Jebel Marra Rural Developments Projects, with support from the World Bank, the EU, the UK, and Saudi Arabia in the 1980s. The engagement ended in the early 1990s when the international community withdrew its support from the new regime under Omar El Bashir (who gained power through a coup d'état). A diligent revision of what had been done and how it informs future concepts might help to avoid repeating the past.[30] So far, data from one international agency are available on the web.[31] In addition, several experiences from other countries in the Sahel are available. Although not focusing on a post-conflict scenario, most of the assessments / inspirations might also apply to the general environmental challenges in Darfur.[32]

Long-term concepts also have to consider changes in society and livelihood patterns over the years and due to the dynamics of the crisis; some of them are irreversible, making it unlikely that anything resembling the old Darfur can be reconstituted. Whatever political resolution is achieved, many IDPs will find their future in the city. Even if there were a peace tomorrow, many would remain in the camps, which might simply turn into urban neighbourhoods, as happened in Khartoum.[33]

In an article in the Humanitarian Exchange Magazine, Brendan Bromwich suggested developing an environmental sensitive recovery and peace building programme that should be based on the following five parameters:[34]

1. The peace process must address the environmental/livelihood conflict at the local or tribal level, in addition to higher-level political issues. Relationships between communities need to be knitted together village by village in the context of numerous tribal agreements. Support to livelihoods is an important entry point for peace initiatives at the tribal level because different livelihood groups need to collaborate over access to natural resources.
2. Rural environmental governance needs to be rebuilt in Darfur in a manner that is sufficiently inclusive to withstand the challenges of severe droughts in coming years and the accompanying risks of further conflict.
3. Proposed support for economic development in Darfur needs to acknowledge that the resource base required as a foundation for sustainable development faces chronic degradation, which has been greatly exacerbated by the impacts of the conflict. Therefore, sustainable resource management, adaptation to the impacts of climate change, disaster risk reduction, drought cycle management, livelihood programming and rebuilding rural environmental governance will be core activities in restoring the foundation upon which Darfur's economy is built.
4. Drought and harvest failure must be planned for as normal occurrences; recovery and development planning must include a flexible relief component, on a demand-led basis.

30 James Morton, Condemned to Repeat the Past: Thirty Years of Understanding Ignored. SSRC-Blog, posted May 6th, 2008. Available at: << http://blogs.ssrc.org/darfur/2008/05/06/condemned-to-repeat-the-past-thirty-years-of-understanding-ignored/>> (accessed 20 July 2009).

31 Hunting Technical Services Ltd. available at <<http://www.htspe.com/research.php>> (accessed 20 July 2009).

32 Chris Reij and Ann Waters-Bayer (eds), Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development, Earthscan, London 2001; Pippa Trench et. al., Beyond any Drought – Root causes of chronic vulnerability in the Sahel (2007). Available at <<http://www.tearfund.org/webdocs/Website/News/Beyond%20Any%20Drought.pdf>> (accessed 20 July 2009).

33 Alex de Waal, Do Darfur's IDPs Have an Urban Future? SSRC-Blog, posted March 31st, 2009. Available at: << http://blogs.ssrc.org/darfur/2009/03/31/do-darfurs-idps-have-an-urban-future/>> (accessed 20 July 2009).

34 See Bromwich (note 147), 8.

5. Similarly, humanitarian programming must adapt itself to Darfur's considerable environmental vulnerability.

The parameters reveal two important issues: first, the immediate interlinkage between environmental challenges and the need to re-establish a solid structure of governance; second, the need to create a strong local government vested with sufficient responsibilities in the area of environment.

3. Relevant Provisions of the Darfur Peace Agreement

a) The relevance of the "Darfur Peace Agreement" (DPA)

The document generally referred to as the Darfur Peace Agreement was signed on May 5, 2006 by the Sudanese Government and the Sudan Liberation Movement (SLM), led by Mini Menawi. The DPA officially never entered into force since the requirements as laid out in the agreement were not met.[35] Despite its general legal irrelevance[36] the DPA has some guiding value. In May 2006, there was a broad consensus on very many issues of the text which could also today serve as a point of departure.

b) DPA provisions related to the recommended five parameters for an environmental sensitive peace building programme.

(1) Para. 149 DPA addresses the challenge of different livelihood groups without explicitly focusing on local structures:

> Competition for pasture and water by nomadic herders and settled agricultural producers is an important problem. The problem shall be addressed in a comprehensive way, by developing policies to reverse environmental degradation and the decline in agricultural yields, gradually shifting the emphasis of herders from quantity to quality, developing a framework for equitable access by various users of land and water resources, as well as developing research capacities in these areas.

The development and the implementation of plans for the management of land is a shared responsibility between the national and state level and includes explicitly the

35 According to Art. 32 DPA (para. 509), "this agreement shall enter into force upon its signing by the Parties". Recital one of the preamble defines the meaning of "parties" while stating "WHEREAS the Government of the Sudan (GoS), the Sudan Liberation Movement/Army (SLM/A) and the Justice and Equality Movement (JEM) (hereinafter referred to as "Parties"), […]. JEM and one part of the SLM never signed the agreement.

36 Despite the legal irrelevance of DPA, signatories might have bilaterally agreed to commit themselves to what has been the content of the DPA document.

"rehabilitation of degraded land and revegetation programs" (paras 172 and 171 (i) / (j)).

(2) Although not specifically focussing on rural environmental governance, Para. 110 provides the

> Recognition of traditional rights (including "hawakeer") and historical rights in land is essential to establish a secure and sustainable basis for livelihood and development in Darfur. This Agreement sets out the mechanisms for recognising and protecting those rights.

This approach is further reaffirmed through para. 63, stipulating that

> Native administration shall have regard, where appropriate, to the established historical and community traditions, customs and practices. Where these are contrary to the provisions of the National or State Constitution or law, the latter shall prevail.

(3) Para. 142 DPA recognizes the significance of the agricultural sector for economic development in Darfur, but does not relate it to environmental challenges

> The agricultural sector, including livestock, has a special significance in the economy and the lives of all Sudanese citizens particularly the people of Darfur states. Accordingly, policies directed to its development shall be prioritised and emphasized.

In addition, para. 147 (i) includes as a key strategic objective the encouragement of

> The production of alternative energy sources and addressing courses of environmental degradation.

In addition, the Interim National Constitution of Sudan - into which a Darfur Peace Agreement needs to be introduced - already assigns authority to states in the following issues: local government; development, conservation and management of state natural resources and state forestry resources; town and rural planning; traditional and customary law; state irrigation.[37]

Thus, central competences necessary to implement the program are decentralized and allow to take responsibility at lower levels of government.

37 See paras 3; 21;32;34;36.

Briefing on Environmental Policy of the Federal Democratic Republic of Ethiopia

Dina Mufti

1. The Resource Base and the need for a Policy

1.1 The Natural Resource Base and the Rural Environment

- Natural resources are the foundation of the economy. Agriculture accounts
  - 45% of the GDP,
  - 85 % of exports and
  - 80 % of total employment.
- Renewable natural resources have now deteriorated to a low level of productivity.
- Accelerated soil erosion, deforestation and land degradation caused a progressive annual loss in grain and livestock production.
- The genetic diversity (flora and fauna) is being eroded due to disruptive interventions & the weakening management in the face of
  - an expanding population and
  - increasing needs of agriculture.

1.2. The Urban Environment

- The current urban proportion of the population is relatively low at only 15% and this rate is likely to rise to 30% by 2020.

1.3. Natural and Cultural Heritage

- Ethiopia's rich natural and cultural heritage that permeates every facet of daily life, that provides a powerful and socially cohesive force in the national consciousness are under threat through neglect, decay, removal or destruction.

1.4. The Need for A Policy on Natural Resource and the Environment

- Environmental sustainability is recognized in the constitution and in the national economic policy and strategy as a key prerequisite for lasting success.
- Therefore, there is a need for a comprehensive environmental policy on natural resources and the environment for a lasting success of the policy.

2. The Policy Goal, Objectives and Guiding Principles

2.1 The Overall Policy Goal

- To improve and enhance the health and quality of life of the people
- To promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole so as
- To meet the needs of the present generation without compromising the ability of future generations to meet their own needs.

2.2 Specific Policy Objectives

The Policy seeks to:

- Ensure that essential ecological processes and life support systems are sustained, biological diversity is preserved and renewable natural resources are used in such a way that their regenerative and productive capabilities are maintained;
- Ensure that the benefits from the exploitation of non-renewable resources are extended as far into the future;
- Identify and develop natural resources that are underutilized by finding new technologies;
- Incorporate the full economic, social and environmental costs & benefits of natural resource development into the planning and implementation processes;
- Prevent the pollution of land, air and water in the most cost-effective way;
- Conserve, develop, sustainably manage and support the country's cultural heritage;
- Ensure the empowerment and participation of the people and their organizations in environmental management activities; and
- Raise public awareness of the essential linkages b/n environment and development.

2.3. The Key Guiding Principles

The Key Guiding Principles are:

- Every person has the right to live in a healthy environment;
- Sustainable environmental conditions and economic production systems are impossible in the absence of peace and personal security.
- The development, use and management of renewable resources shall be based on sustainability;
- The use of non-renewable resources shall be minimized and where possible their availability extended (e.g. through recycling);
- Appropriate and affordable technologies which use renewable and non-renewable resources efficiently shall be adopted, adapted, developed and disseminated;
- Development activities shall minimize degrading and polluting impacts on ecological and life support systems; (When a compromise between short-term economic growth & long-term environmental protection is necessary)
- Conditions shall be created that will support community and individual resource users to sustainably manage their own environment and resources;
- Social equity shall be assured particularly in resource use;
- Regular and accurate assessment and monitoring of environmental conditions shall be undertaken;
- Increased awareness and understanding of environmental and resource issues shall be promoted by policy makers and by the population,
- The adoption of a "conservation culture" in environmental matters among all levels of society shall be encouraged;
- Local, regional and international environmental interdependence shall be recognized;
- Natural resource and environmental management activities shall be integrated across all sectors and;
- The integrated implementation of policies and strategies shall be seen as a prerequisite to achieving the objectives of the Policy on the Environment.

3. Sectoral Environmental Policies

3.1 Soil Husbandries and Sustainable Agriculture

The Policies are:

- To foster a feeling of assured and uninterrupted access to the natural resources on the part of farmers and pastoralists;

- To base increased agricultural production on sustainably, improving and intensifying existing farming systems by developing and disseminating technologies which are biologically, appropriate under the prevailing environmental and socio-cultural conditions for farmers;
- To promote the use of appropriate organic matter and nutrient management for improving soil structure, nutrient status;
- To safeguard the integrity of the soil and to protect its physical and biological properties, through management practices for the production of crops and livestock;
- To promote effective ground cover as one of the most important factors in soil erosion control;
- To promote in drought-prone and low rainfall areas water conservation for physical soil conservation;
- To promote a long-term approach to agricultural research programmes to develop appropriate farming and land management systems that yield high outputs;
- To ensure that planning for agricultural development incorporates the potential costs of soil degradation through erosion and salinization as well as soil and water pollution;
- To institute the stall feeding of domesticated animals in order to encourage revegetation of grazing lands and the reduction of soil erosion;
- To develop forestry on the farm and on eroding and/or eroded hillsides in order to increase the stock of trees;
- To use biological and cultural methods as well as resistant or tolerant varieties or breeds as a pest and disease management method in preference to chemical controls;
- To safeguard human and environmental health by producing adequate regulation of agricultural (crop and livestock) chemicals;

3.2. Forest, Woodland and Tree Resources

The Policies are:

- To recognize the complementary roles of communities and the state in forestry development;
- To encourage individuals and communities to actively involve in the planning and implementation of forestry programmes to ensure sustainability and minimize cost;
- To ensure that forestry development, management and conservation strategies integrate with land, water and energy resources and ecosystems;
- To assist the natural process of afforestation of uncultivable areas by controlling felling and by planting judiciously as well as by other affordable interventions;

- To achieve the principle of "sustainable forest management" though achieving social acceptability and economic viability;
- To pursue agricultural and other policies and programmes that will reduce pressure on fragile woodland resources and ecosystems.

3.3. Genetic, Species and Ecosystem Biodiversity

The Policies are:

- To promote conservation in a nature reserve as the primary target for conserving both wild and domesticated biological diversity;
- To promote conservation of crop and domestic animal biological diversity through the conscious conservation of samples of such ecosystems;
- To ensure that the importation, exportation and exchange of genetic and species resources is subject to legislation, e.g. to ensure the fulfilling of international obligations. Above all the importation and use of biological material should be under stringent regulations;
- To promote the involvement of local communities inside and outside protected areas in the planning and management of biological diversity;
- To ensure that the conservation of biological diversity outside the protected area system be integrated with strategic land use plans, local level plans and sustainable agricultural and pastoral production strategies;
- To ensure that park, forest and wildlife conservation and management programmes to be channeled to local communities affected by such programmes.

3.4. Water Resources

The Policies are:

- To ensure that the control of environmental health hazards be a necessary condition in the design, construction and use of dams and irrigation systems;
- To recognize that natural ecosystems are fundamental in regulating water quality and quantity and to integrate their rehabilitation and protection into the conservation, development and management of water resources;
- To ensure that any proposed introduction of exotic species into water ecosystems be subject to detailed ecological studies and environmental impact assessment;
- To involve water resource users in the planning, implementation and follow up in their localities of water policies, programmes and projects so as to carry them out without affecting the ecological balance;
- To subject all major water conservation, development and management projects to the environmental impact assessment process;
- To promote effective water management techniques at the farm level.

- To recycle waste water when it has been found to be safe for health and the environment.

3.5. Energy Resource

The Policies are:

- To adopt an inter-sectoral process of planning and development
  - integrate energy development with energy conservation, environmental protection and sustainable utilization of renewable resources;
- To promote the development of renewable energy sources and reduce the use of fossil energy resources both for ensuring sustainability and for protecting the environment;
- To conduct feasibility studies and environmental impact assessments for hydroelectricity facilities to eliminate or minimize damage to the natural resources base and/or to environmental well-being;
- To review current institutional and regulatory arrangements in the energy sector to suggest to develop and market environmentally sound energy sources;
- To locate, develop, adopt or adapt energy sources and technologies to replace biomass fuels.

3.6. Mineral Resources

The Policies are:

- To adopt as mineral resources are depleted sooner or later;
- To support small-scale miners to practice mining so as to be consistent with environmental laws to safeguard the well-being of the land and its natural resources;
- To advise and train mining communities in methods of environmental protection and reclamation of abandoned mining areas;
- To implement continuous programmes of education for the public and industry, environmental monitoring in environmental management during mining operations;
- To ensure that licensed mining operations prepare pre-development environmental impact studies and undertake appropriate mitigation;
- To prepare and enact specific mining environmental protection legislation; and
- To establish a guarantee system for enforcing measures that should be taken for the restoration of the land to its previous conditions.

3.7 Human Settlements, Urban Environment and Environmental Health

The Policies are:

- To incorporate rural urban migration, human settlement and environmental health concerns;
- To integrate harmoniously, human-produced and natural elements in the development and management of urban areas in order to maintain the natural ecosystems;
- To ensure that improved environmental sanitation be placed highest agendas for achieving sustainable urban development;
- To recognize the importance of bring about behavioral change and public awareness of environmental sanitation problems through education to achieve demand-driven community led programmes of improved urban environments;
- To bring about a sound partnership between the government and communities and NGOs in the development of an integrated sanitation delivery system;
- To give priority to waste collection services and to its safe disposal;
- To undertake studies which identify suitable sanitary landfill sites in the major cites and towns;
- To plan and create green spaces within urban areas, including community forests and woodlands for fuel wood as well as for recreational amenity;

3.8. Control of Hazardous Materials and Pollution From Industrial Waste

The Policies are:

- To adhere to the precautionary principle of minimizing and preventing discharges of substances, biological materials from industrial plants;
- To adopt the "polluter pays" principle while endorsing the precautionary principle;
- To establish clear linkages between the control of pollution and other policy areas (including water resources, agriculture, human settlements, health and disaster prevention and preparedness);
- To provide adequate regulation of agricultural (crop and livestock) chemicals and micro-organisms;
- To ensure that pollution control is commensurate with the potency, longevity and potential to increase or reproduce of the pollutant;
- To review and develop guidelines for waste disposal, public and industrial hygiene to enable the cost-effective implementation of defined standards of control;
- To formulate and implement a country-wide strategy on the management of wastes from the medical, agriculture and other sectors that may use potentially hazardous biological organisms;

- To establish a system for monitoring compliance with land, air and water pollution control standards and regulations;
- To maintain an up-to-date register of toxic, hazardous and radioactive substances;
- To maintain regular environmental audits to ensure the adoption of environmentally sound practices in development activities;
- To promote waste minimization processes, including the efficient recycling of materials wherever possible;
- To create by law an effective system of control, distribution, utilization and disposal or expiry of chemicals or biological organisms.

3.9. Atmospheric Pollution and Climate Change

The Policies are:

- To promote a climate-monitoring programme as the country is highly sensitive to climatic variability;
- To recognize that even at an insignificant level of contribution to atmospheric greenhouse gases, a firm commitment to the principle of containing climate change is essential and to take the appropriate control measures for a moral position;
- To recognize that Ethiopia's environmental and its energy prospect coincide with the need to minimize atmospheric inputs of greenhouse;
- To actively participate in protecting the ozone layer since, as the highlands of Ethiopia already have a thin protective atmosphere and are liable to suffer agricultural losses;
- To recognize that the continued use of biomass for energy production makes no net contribution to atmospheric pollution and to maximize the standing biomass in the country for offsetting the carbon dioxide emission;

3.10. Cultural and Natural Heritage

The Policies are:

- To promote the perception of heritage conservation as part of, and integrated with, Ethiopia's general social and economic development;
- To recognize that the country's heritage conservation should not be seen as the responsibility of government alone and
- To encourage communities to play a leading role in the country's heritage conservation;

- To promote a sustainable heritage conservation and management programme, their interrelationships and the ways in which each contributes to social and economic development; and
- To ensure that the environments of heritage sites are so managed as to protect the landscape and the artifacts or the fossils as the case may be.

4. Cross-sectoral Environment Policies

4.1. Population and the Environment

The Policies are:

- To integrate population planning, resources management and care for the environment to achieve a sustainability of life styles;
- To give attention to the education, especially in the context of development and the sustainable use of natural resources;
- To undertake a comprehensive and country-wide assessment of the human carrying capacity of the environment to identify potential areas for voluntary resettlement;
- To ensure a complete empowerment of women especially to enable their full participation in population and environmental decision making, resource ownership and management; and
- To promote off-farm and on-farm income generating programmes which aim at the alleviation of poverty, especially, among women.

4.2. Community Participation and the Environment

The Policies are:

- To ensure that all phases of environmental and resource development and management are undertaken based on the decisions of the resource users and managers;
- To reorient management professionals employed in environmental extension programmes to embrace participatory development and to disseminate the results of scientific research;
- To develop effective methods of popular participation in the planning and implementation of environmental and resource use and management projects and programmes;

- To develop the necessary legislation, training and financial support to empower local communities to ensure genuine grassroots decisions in resources and environmental management;
- To greatly increase the number of women extension agents in the field of natural resource and environmental management; and
- To ensure information flow among all levels of organization at the grassroots level by developing a two way mechanism for data collection and dissemination.

4.3. Tenure and Access Rights to Land and Natural Resources

The Policies are:

- To recognize that the user of land has the right to a secure and uninterrupted access to it and to renewable natural resources on it (e.g. trees, water, wildlife and grazing);
- To recognize and protect the customary rights of access to and use of land and natural resource which are constitutionally acceptable are preferred by local communities.

4.5. Environmental Economics

The Policies are:

- To ensure that environmental costs and benefits, used in the development planning process including programme consider environmental gains and losses;
- To recognize that environmental impacts have long time spans, usually to be reckoned in decades,;
- To initiate a pilot project on the application of environmental accounting in Ethiopia;
- To explicitly consider in 5-, 10-, 50- and 100-year time perspectives the economic costs and benefits to the environment in the planning of all major development programmes, projects and activities;
- To assess and charge the appropriate level of user, and also to identify the appropriate target groups and provide subsidies, taxes or tax concessions to achieve the sustainability of the use of natural resources and the environment; and
- To develop the capacity of government agencies to analyze the impact of user fees and incentives and to monitor contracts, leases, concessions and performance bonds used for achieving sustainable resource management and environmental protection.

4.6. Environmental Information System

The Policies are:

- To adhere to the principle that the right to live in a clean and healthy environment carries with it the right to be informed about environmental issues and to develop an appropriate information system;
- To create by law a system for the protection of community intellectual property rights.
- To make available environmental information as a legal right to all interested parties;
- To base information generation on an identification of user needs, i.e. it be demand-driven;

To ensure that all environmental data collection, analysis and information dissemination are coordinated and standardized but not centralized;

To provide clear legislation and guidelines on environmental data and information generation, collection and dissemination;

4.7. Environmental Research

The Policies are:

- To develop strategic environmental research which aims at identifying the social, economic and technical factors which influence resource management;
- To promote the training and the improvement of the working conditions of researchers so that they become technically competent and familiar with the agro-ecological and socio-economic conditions of the potential end users;
- To put in place an appropriate information exchange system & institutional structure which facilitate closer interaction among farmers, pastoralists, government professionals, development NGO's, & researchers;
- To support research on appropriate technologies for environmental management through a partnership b/n scientists & potential end users so as to benefit from the universal knowledge;

4.8. Environmental Impact Assessment (EIA)

The Policies are:

- To ensure that environmental impact assessments not only physical & biological impacts but also address social, socioeconomic, political & cultural conditions;
- To ensure that public and private sector development projects recognize environmental impacts and incorporate their containment into the development design process;

- To recognize that public consultation is an integral part of EIA and ensure that EIA procedures make provision for review and public comment before consideration by decision makers;
- To ensure that an environmental impact statement always includes mitigation plans for environmental management problems and contingency plans in case of accidents;
- To ensure that, during project implementation, environmental audits regarding monitoring, inspection and record keeping take place for activities where these have been required by the Environmental Impact Statement;
- To establish the necessary institutional framework and determine the linkages of its parts for undertaking, coordinating and approving EIAs and the subsequent system of environmental audits required to ensure compliance with conditionality;
- To develop detailed sectoral technical guidelines in EIAs and environmental audits;
- To ensure that social, socio-economic, political and cultural conditions are considered in environmental impact assessment procedures and included in sectoral guidelines; and
- To develop EIA and environmental audit capacity and capability in the Environmental Protection Authority.

4.9. Environmental Education and Awareness

The Policies are:

- To promote the teaching of environmental education on a multidisciplinary basis and to integrate it into the ongoing curricula of schools and colleges;
- To target the public and private sector activities that have significant environmental impacts for environmental education and awareness programmes;
- To formulate environmental awareness programmes to address specific environmental problems of particular localities;
- To recognize the important role the mass media play and to effectively use them in creating and promoting environmental awareness;
- To encourage the local development of environmental awareness associations and programmes specific to particular agro-ecological zones;
- To initiate and support the involvement of local community and religious leaders in programmes to promote environmental awareness.

5. Policy Implementation

5.1. Institutional Framework, Responsibilities and Mandates

The Policies are:

- To give political and popular support to the sustainable use of natural, cultural resources and environmental management for effectiveness at the federal, regional and community levels;
- To ensure that legally established management bodies ate each level handle the sectoral and cross sectoral planning and implementation issues;
- To determine institutional arrangements for the formulation of conservation and natural resource development and management strategies, legislation, regulation, monitoring and enforcement using the following criteria:
  - Conformity with the Constitution, especially with respect to the decentralization of power;
  - Harmonization of sectoral interests;
  - Integration of environmental planning with development planning;
- To avoid conflicts of interest by assigning responsibilities to separate organizations for environmental and natural resource development activities on the one hand, and environmental protection, regulation and monitoring on the other;

5.2. Legislative Framework

The Policies are that the Law should:

- To encourage participation of people in the development policies, laws and plans for the sustainable use and management of resources and the environment;
- To create of programmes that motivate the peoples into restoring, protecting, managing and sustainably using the resources and the environment of the country;
- To ensure agreement with the constitution and the prevailing, political, social, cultural and economic policies, laws and practices and to harmonize these with the principle of sustainable development;
- To create the conditions for formulating, reviewing and updating sectoral regulations on the restoration, protection, management and sustainable use of the resources and the environment; and
- To provide a broad framework for both punitive and incentive measures.

5.3. Monitoring, Evaluation and Policy Review

The Policies are:

- To ensure that individual programme and project monitoring becomes the responsibility of the appropriate federal and/or regional implementing and/or mandated agencies;
- To ensure that the monitoring of the overall impacts of the implementation of the Federal Environmental Policy on the country's renewable natural resources and environmental support systems;
- To ensure that the Environmental Protection Authority carries the overall monitoring of the Policy implementation and is responsible for proposing modifications;
- To ensure that line ministries and regional bureaus monitor the overall impact of the implementation of this Federal Environmental Policy;
- To ensure that, starting with the Community Environmental Coordinating Committee and aggregating upwards through the appropriate level, reviews of the status of natural resources and the environment;

Ethiopian Millennium Tree Plantation Campaign

- 760 million tree seedlings transplanted in 2008/09
- 500 million tree seedlings are expected to be transplanted in 2009/10

Eradicating Vulnerability to Famine

Admasu[1] *Gebeyehu*

Abstract

The major source of vulnerability to famine in the Horn of Africa is generated by the oppression and exploitation of the people by despotic regimes. Adverse natural factors simply accelerate the process of famine generated by the despotic regimes. The fact that the young peoples of Horn of Africa are obliged to become canon fodders by the thousands for the land that is not theirs does not bother the members of the regimes. Through the process of building huge armies, dictatorial regimes take away the able-bodied peasants, leaving old men, women and children to more vulnerability. They have means to purchase killing machines for suppressing the people and the engaging in senseless wars, but not for relief assistance to impoverished peasants and pastoralists on the verge of certain death. The regimes use the people that they continually impoverish to extract economic assistance.

Governments that face free press and free elections are forced to produce quick action to avoid famine. In this regard, dictators in the Horn of Africa do not allow freedom of speech, freedom of the press, free opposition political parties, independent courts, free and regular elections, etc. They strictly enforce the absence of freedom, and relentlessly apply the power of the press, the courts, the bureaucracy, the army and the police *against* individual liberties. The ruling political parties either restrict the activities of opposition political parties or outlaws opposition parties altogether. They also allow the courts little or no independence; judges are expected to issue rulings based on what the dictators want by contradicting the truth or the law. The dictators of Horn of Africa are much more inclined to wars as to divert the attention of the people. Their secrecy and unaccountability place few restrictions on their war-making decisions. The same lack of openness and accountability makes them much more prone to mass murders of outcasts, political opponents and even people simply suspected of opposing the government. In absence of free elections, strong opposition parties, free press and independent courts to challenge them, dictators are ordering mass death at their whim.

Therefore, the struggle for eradicating vulnerability to famine and other major problems of the peoples of Horn of Africa must focus on three *fundamental* and *inseparable* areas: striving for the establishment of democratic systems; promoting

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the rule of law and due process; encouraging and monitoring the respect for human rights.

1. Introduction

Map of Horn of Africa

The Horn of Africa includes Ethiopia, Somalia, Djibouti, Sudan and Eritrea and home to 131 million people of different ethnic and religious backgrounds. More information is presented in the Annex I (*Statistical Summary of the Situation in the Horn of Africa*). There have been and still ongoing intra-and inter-state violent conflicts and concomitant social, political and economic crises leading to consecutive severe fames.

There are many factors that cause famines both natural and man-made crises including such as war and drought. One way of looking at the root causes of famine crises, particularly in the case of the Horn of Africa, might be focusing on the main causes such as dictatorial political regimes (completely man-made) and drought (by enlarge nature-made).

We have seen how watershed destruction has caused wells and springs to dry up; how mismanagement of lands has allowed desertification to spread; how the loss of fertile top soil leads to declining crop and livestock yields. This situation certainly contributes to vulnerability to famine. However, this paper argues that any effort to bring about reduction in vulnerability to famine in the Horn of Africa should focus on the real problems rather than the symptoms.

For instance*, drought is a natural*, recurrent feature of climate and it occurs almost everywhere. Wherever appropriate systems exist, society can be better prepared and able to deal with the damaging effects of drought in the most fair and efficient manner possible. They do not experience the kind of famine that lets hundreds of thousands or more die of starvation.

Drought is one of major factors that can trigger famine. Drought is a natural hazard that can not be stopped from occurring. However, the severe damages due to droughts can be stopped from happening through proper proactive measures. The focus of this paper is on analyzing the multiple and complex man-made causes of famine and also the weaknesses of taking appropriate actions in minimizing the nature-made causes of famine. This paper examines some of the issues resulting from dictatorial regimes of the Horn of Africa including conflicts, human right violations

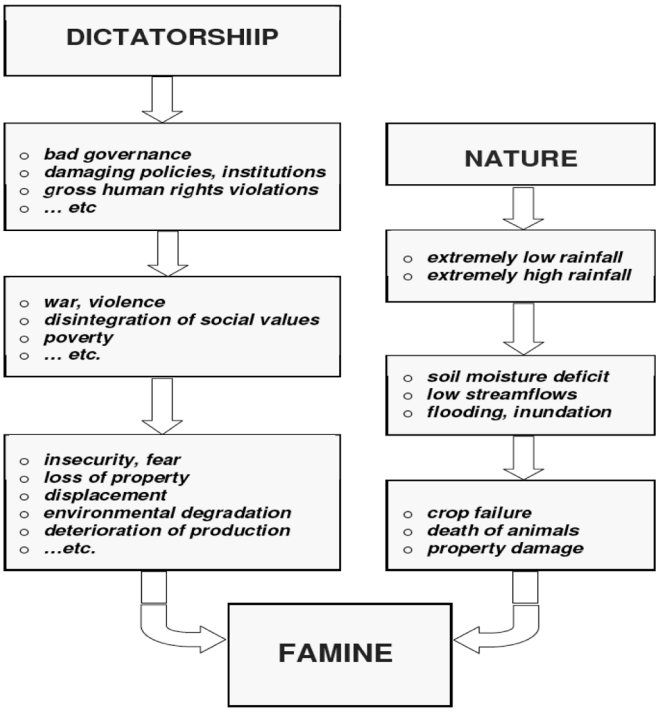
and absence of the rule of law, and in turn how the acts of dictators significantly contribute to widespread famines.

2. Faces of the Crucial Problems

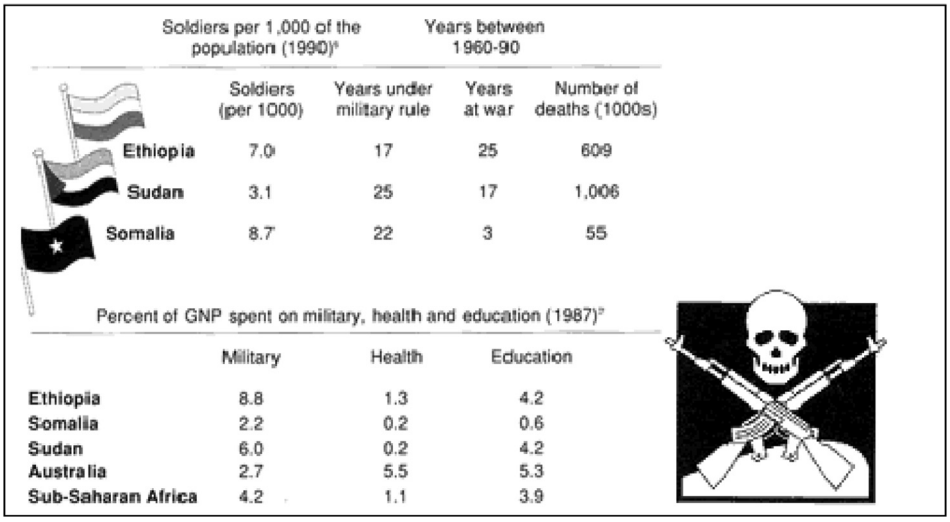
The Horn of Africa is where struggles over economic and political power often take the form of ethnic conflict. In the past three decades hundreds of thousands of people have indeed become the victims of violent conflict and dictatorships in the region. Conflicts have displaced large numbers of people, driving them across national borders as migrants.

People who live in the Horn of Africa have faced a pervasive crisis for a very long time. The people suffer from the impact of dictators who try to manipulate and control the state for their own narrow interests. The crisis is manifested in many different forms: cross-border wars, civil wars, gross violation of human rights, the suppression of civil liberties, widespread poverty, famine, epidemics, debt problems, population displacement, ecological disasters, etc. Marginalised social groups – women, children, the elderly, economically destitute and ethnic minorities – bear the brunt of the crisis.

The causes of famine flow diagram



The crisis in the Horn of Africa appears to be without end. Attempts by groups inside and outside the countries to manipulate and control their states, and the inequitable distribution of resources generate intense armed conflicts among different social groups. These conflicts result in further depletion of resources, violence, disruption of economic production and increased demographic displacement. Eventually, the crisis destroys the social fabric by promoting militarisation, tyranny and mutual animosity and together these over time produce a 'culture of warfare'.



Soldiers per 1,000 of the population (1990)[6] — Years between 1960-90

	Soldiers (per 1000)	Years under military rule	Years at war	Number of deaths (1000s)
Ethiopia	7.0	17	25	609
Sudan	3.1	25	17	1,006
Somalia	8.7	22	3	55

Percent of GNP spent on military, health and education (1987)[7]

	Military	Health	Education
Ethiopia	8.8	1.3	4.2
Somalia	2.2	0.2	0.6
Sudan	6.0	0.2	4.2
Australia	2.7	5.5	5.3
Sub-Saharan Africa	4.2	1.1	3.9

2.1 Patterns of Violent Conflicts

The inter-state violent conflicts that have been recorded in the Horn of Africa between 1990 and 2008 are the 1998-2000 Eritrea-Ethiopia war and the three-day military clash between Eritrea and Djibouti along their common border in June 2008. However, intra-state conflicts have been more prevalent. These conflicts have been between governments and groups that have challenged their legitimacy. The patterns of conflict in the Horn of Africa have been highly destructive. Neighbouring countries have intervened and thereby prolonged each other's conflicts. In addition, the conflicts in the Horn of Africa have been aligned to global agendas. Annex II shows the major actors that have been involved in armed conflicts in the Horn of Africa countries between 1990 and 2008.

2.2 Human Security

Out of 60 failed states identified by the Foreign Policy Magazine, 50% of them are in Africa. This includes Ethiopia, Sudan, Eritrea and Somalia.[2] This ranking exercise involved using a set of political, economic and military performance indicators. The seriousness of governance problems in the Horn of Africa, as the region has remained immersed in political crises whose impact has brought about the death and displacement of millions of people, destruction of economies, bankruptcy of states, environmental degradation and deterioration of security situations. For instance according to the United Nations High Commissioner for Refugees (UNHCR), in 2006, there were over 2 million internally displaced persons (IDPs) and 600,000 refugees in the Horn of Africa. Another 3.3 million people from this region have become refugees living in different part of the world.[3] Moreover, despite having abundant resources and different agro-climatic zones to allow the diversification of economic production, the Horn of Africa remains one of the poorest regions in the world.[4]
Countries of the Horn of Africa cannot achieve any development if civil war continues to erode the material and human resources by displacing the working population, disrupting agricultural production, or destroying social and physical infrastructures. The is an urgent need for the protection of men, women and children from violent conflicts including statesponsored physical and psychological abuses.

2.3 Political Exclusion

Political exclusion through single-party, state-dominated authoritarian rule has been an important cause of Horn of Africa's deepening crisis. Decision-making processes offered no room for participation or expressions of dissent by affected communities. The lack of open, democratic structures gives a convenient excuse for opposition leaders to go underground and into the bush. In response, state repression also increases, reinforcing the cycle and delaying the opportunity to address fundamental issues. Unequal access to state power inevitably creates conflict, as those in power attempt to consolidate it and those outside the circle fight to get in. Acts by individuals and groups holding government power or rebels against their respective perceived threats to assure their own securities consequently create an environment of increased threat or reduced security for most of the people.

In current Horn of Africa, ruling elites now fully control the nations' production and distribution of material and social resources. This makes political power

2 Foreign Policy Magazine, The Failed States Index 2007 (Washington, D.C: Carnegie Endowment for International Peace, July/August. 2007).

3 United Nations Commissioner for Refugees (UNHCR), "Statistical Yearbook 2006: Trends in Development, Protection and Solutions," http://www.unhcr.org/statistics/STATISTICS/478cda572.html (accessed May 20, 2008)

4 UNDP, Human Development Report 2007/2008: Fighting climate change – Human solidarity in a divided world (New York: UNDP), http://hdr.undp.org/en/reports/global/hdr2007-2008/ (accessed May 26, 2008).

more desirable than ever, especially when scarcity intensifies competition and can be manipulated by politicians to mobilize support. The experience in Horn of Africa is that opposition groups attempt to reform state structures to allow wider access to decision-making, or advocate for autonomy or independence, ultimately to capture as great a share of the state's resources as possible.

Dictators in the region came to power by force and are making peaceful succession of power by election to impossible. Leave alone political opponents, they do not want to see independent civil societies. Independent civil societies are either banned or forced to go underground or carefully monitored to ensure they are apolitical. Dictators attempting to eliminate or control civil society often use similar names with the deliberate act of cheating donors and external observes. Its specific task is to express public solidarity with its regime at international meeting places even while claiming to represent civil society. In these circumstances the intent of the state may be that it aims not to depoliticise civil society, but to subjugate or eliminate it.

2.4 Common Characteristics the Dictatorships

Dictatorships hate and fear freedom. Dictatorships do not want to guarantee freedom of speech, freedom of the press, free opposition political parties, independent courts as well as free and regular elections.

It is funny to observe that dictatorships of Horn of Africa see themselves as a transition to democracy while the fact is that these regimes strictly enforce the absence of freedom, and relentlessly apply the power of the press, the courts, the bureaucracy, the army and the police against individual liberties. Rather, what is on the ground is these police states have some form of neighborhood block watches, requiring residents to inform on neighbors who exhibit any democratic tendencies. Some dictators allowed limited freedom of expression (written or spoken) to single out democratic tendencies in order to trap them. The dictatorships also tend to justify their abuses by claiming the total repression serves a higher cause, like equality or stability.

2.5 Fear – the Foundation of Dictatorship

> *"When the people fear their government, there is tyranny; when the government fears the people, there is liberty."* Thomas Jefferson

> *"Since love and fear can hardly exist together, if we must choose between them, it is far safer to be feared than loved."* Niccolò Machiavelli

Dictatorships create environment of fear and they cultivate it. They depend on it to secure popular submission, compliance with official dictates, and, on some occasions, affirmative cooperation with the state's enterprises and adventures. Without popular fear, no dictatorship could endure more than a day.

However, what dictatorships forget is successive doses of fear-mongering are added their effectiveness declines. The first time the government cries wolf, the public are frightened; the second time, less so; the third time, still less so. When the dictators play the fear card too much, they overload the publics' sensibilities, and eventually people discount almost entirely the dictatorships attempts to frighten them further.

Dictators themselves are also ruled by their own fears. They are afraid all the time – they are afraid of their own shadows. They are afraid of criticism and become defensive and bitter when they are challenged. They see the world as a place where they get their way by threat, intimidation, cheating, lying and robbing; rarely by persuasive logic or compelling arguments and evidence. Because they are afraid, they are also isolated and friendless. Dictators fear not only for their physical safety, but they are also afraid of facing the truth about themselves and betrayal from those closest to them.

Somali gunmen

Former rebels (current Ethiopian soldiers)

2.6 Gross Human Rights Violations

The dictatorships of Horn of Africa committed targeted human right violations including mass extrajudicial killings. There are abundant reports about the crimes committed by the regimes: such as the *Darfur* crises. However, few examples from Ethiopia presented not only because the author has witnessed the situation but also fairly represent the situation in the Horn of Africa.

Since 1991, the regime in power continues to commit massacres against the Amharas, Oromos, Anuaks, Sidamas, Guragaes, and ethnic Somalis, etc. on regular basis. The rulers of Ethiopia responsible for the massacre in Arbagugu , Bedeno, Ogaden, Oromia, Gambella, Sidamo, Guragae , Addis Ababa, Jimma, Gondar and other places. The Ethiopian dictators committed targeted mass murder and genocide against several ethnic groups in many parts of Ethiopia. Most the genocide was covered under the pretext of fighting terrorism. It is worth looking to the following recent few specific cases in order to feel the situation.

Addis Ababa: In April 2001, Ethiopian security forces raided Addis Ababa University (AAU) to quell student protests. During the raid, police fired live ammunition at hundreds of student and teachers, killing 41 students and arresting hundreds. The students were protesting several university policies that limit academic freedom in Ethiopian universities, including a ban on student unions and student government. Ethiopia is reported to be the only country in sub-Saharan Africa in which the government has set up a police station on campus for the purpose of controlling dissenting students and professors.

Looqe-Awassa: On May 24, 2002 at about mid day local time, Ethiopian soldiers conducted the operation of brutal killings against peaceful Sidama demonstrators who have been carrying green leaves of the trees and Ethiopian flag symbolising peace. A cruelest mass massacre took place when peaceful Sidama elders accompanied by about seven thousands people of all age groups, high school and college students, peasants and civil servants marched towards 'Awassa' city from Looqe village which is located about four kilometres South West of Awassa to protest against TPLF's undemocratic measures; particularly the decision of TPLF that denies the administrative and ownership right of their own city and land. All of a sudden, the people heard roaring sounds of heavy guns along all road sides which is slaughtered the elders and young people causing bloodshed of which the TPLF wanted as sacrifice for the celebration of its oppressive anniversary. The total of 45 death named by different sources, of which from 25 are named by Ethiopian Human Right Council (EHRCO).

Oromiya: and ***Southern Region***: In its 2003 report covering January-December 2002, Amnesty International (AI) reported "… Police dead over 230 people and detained several hundred more in Oromia and the southern region in connection with demonstrations, mostly peaceful. Many human rights violations including torture, rape and extrajudicial execution were reported, particularly in conflict zones in the Oromia and Somali regions…… On 10 March in Teppi town in the southwest, police shot dead up to 200 demonstrators of the Shekicho and Mezenger ethnic groups, who were protesting against administrative boundary changes. Over 300 were detained…"

Gambella: A report based on specific incidence states "…uniformed soldiers of the Ethiopian government attacked a remote town in the western part of the country on Dec. 13, 2003, and killed more than 400 members of the Anuak tribe … more than a dozen Anuak villages in the western Ethiopian province of Gambella, …. have driven more than 10,000 Anuak into refugee camps in neighboring Sudan and

Kenya…". Another report based on longer period observation states "…at least 1500 and probably as many as 2500 Anuak civilians have died…hundreds of people remain unaccounted for and many are believed to have been "disappeared" (murdered) by government forces…Poor rural villages, where Anuaks and other ethnic minorities live on the margins of subsistence, have been attacked, looted, and burned. EPRDF soldiers have burned thousands of Anuak homes… Anuak women and girls are routinely raped, gang-raped and kept as sexual slaves. Girls have been shot for resisting rape, and summary executions of girls held captive for prolonged periods, as sexual slaves have been reported. In the absence of Anuak men -killed, jailed or driven into exile -Anuak women and girls have been subject to sexual atrocities from which there is neither protection nor recourse…"

Addis Ababa: Opposition candidates and supporters were arrested, beaten and intimidated in the run-up to elections. Some 9,000 opposition supporters were detained in June for several weeks following protests at alleged fraud in elections in which soldiers killed at least 36 people. In November, police killed at least 192 people after peaceful protests. Over 10,000 opposition supporters and demonstrators were detained. Ten new members of parliament, 15 journalists, several human rights defenders and prisoners of conscience were among 86 detainees later charged with fabricated treason, genocide and other offences.

Qorile: In *Qoriile*, on July 22nd 2007, Ethiopian armed forces came with a list of names, and then arrested a number of civilians. They transferred them to their barracks, where they were subjected to extensive torture. On July 24th 2007, the Ethiopian armed forces carried out a cold-blood massacre killing the detainees in their custody, in *Babaase*. Most of the victims were hanged from acacia trees and then shot to ascertain their death. The names of the dead are: Hassan Abdi Abdullahi, Ilmoge Badal Abdi Abdullahi, Hassan Burale Ilmi-Yare, Ali Burale Ilmi-Yare, Ahmed-Gani Guled Ali, Farah Hassan Halonfi, Mrs. Ayan Aw Ali God, Hussien Gahnug and Abdirashid Sheikh Mohamoud. The bodies of the victims were forbidden to be buried and were displayed in public to spread terror among the civilian population.

Ethiopia-Eritrea *(Mass expulsions)[5]:* According to the report of Human rights Watch report "… During the course of the war Ethiopian authorities forcibly expelled some 75,000 Ethiopians of Eritrean origin.". Similarly "…. Following the Ethiopian army's major May 2000 offensive, which drove inside Eritrea, summarily expelled thousands of Ethiopians."

5 The Horn of Africa war: *Mass Expulsions and the Nationality Issue* (June 1998-April 2002). Human Rights Watch, Vol.15, No.3(A), January 2003.

Ugly faces of famine

Persistent and widespread famine

Families displaced by years of war live in caves

Displaced mothers and children

Food shortages

Hunger is leading to malnutrition and death

3. Positive Contributions

3.1 The Struggle Striving for Rule of Law and Democratic System

Despite the harsh measures taken by dictators to silence the peoples of the Horn of Africa, there are many organizations and individuals who are struggling for following values.

The *democratic system*:

- the recognition of the people as sovereign and as the ultimate source of any political authority;
- freedom to form associations and organizations for all interest groups and the unhampered advancement of their causes by all peaceful means;
- freedom of all political parties to operate in every part of the country;
- freedom of the press;
- free and fair elections through which the people elect their representatives and administrators; and
- total rejection of violence or war as a means of acquiring or maintaining power.

The *rule of law*:

- the concept that no man is above the law;
- that any legal issue shall be resolved with due process of law;
- that every accused person has the right to proper defense; and
- the judiciary shall be totally independent from the executive and respect for judicial independence.

Human rights are *freedoms from* and *freedoms for***.**

- freedoms from oppression and exploitation
- freedoms from bigotry and intolerance;
- freedoms from discrimination and abuse;
- freedoms from arbitrary rule and injustice; and
- freedoms from intimidation and fear.
- freedoms for the enjoyment of life, peace, security, justice and equality;
- freedoms for the unfettered expression of everyone's capacity to create, to work and make a decent living;
- freedoms for movement within a country and abroad; and
- freedoms for exercising commensurate share of power in the affairs of the government.

Human right activists continuously condemn the extrajudicial killings and called upon the respective governments to investigate the killings of the dead and to bring to court the killers. They have clearly warned that it is a blatant violation of human rights to organize a death squad and have people shot dead in broad daylight in an open street. Hence the human right activists strongly urged the governments to take appropriate steps to restrain the security forces from engaging in such acts. The have exposed the illegal acts committed by the dictators in return they have been kept in prison, tortures and even killed.

Journalists, human right activists, NGO leaders, and politicians promoting non-violence way of power sharing are working in an environment of threats to their life. The author would like to provide one example that shows the risk, the danger and threat level that the human right activists and civil society leaders facing.

> *Mr. Assefa Maru was killed on May 8, 1997 at 8:20 a.m. while he was walking from his home to his office. According to many eye witnesses, Mr. Assefa was stopped by a Toyota pick-up driving towards him. Apart from the driver and the policeman holding a walkie talkie, the vehicle carried six other policemen armed with kalashnikoves and hand grenades round their waist. Then a policeman fired a volley of shots at Mr. Assefa with an automatic gun. Mr. Assefa died instantly. ……. At the lunch time news, the government radio reported: "The Federal Police Investigation Coordination Department has announced that the members of the anti-peace group which called itself Ethiopian Unity Patriots Front have been taken into custody and that Mr. Assefa Maru, who was said the Front's leader and been coordinating its activities, has been shot dead while trying to escape." This was how the govern-*

ment acted … killing an innocent man at open day light and misusing the public media to cover up its crimes.

Mr. Assefa was a member of the Executive Committee of Ethiopian Teacher's Association (ETA). He participated as senior contributor to free press. He had also been a member of Ethiopian Human Rights Council (EHRCO) since 1992. Mr. Assefa was 37 years old, married and a father of two children. His son is only one year and nine months old while his daughter is just two months old. Mr. Assefa was a responsible person who believed in dialogue and peaceful struggle. Mr. Assefa was one of the strong believers and advocate of non-violence way to bring about a change.

3.2 The East and Horn of Africa Human Rights Defenders Project (EHAHRDP)

It is encouraging to see various scattered organizations coming forming a forum in order to strengthen decisive efforts that plays a decisive role in the struggle of the people of Horn of Africa for freedom. In this regard, establishment the East and Horn of Africa Human Rights Defenders Project (EHAHRDP) is a positive contribution.

EHAHRDP's declared objectives are -to protect and defend HRDs in the region, to build the capacity of HRDs in the region, and to advocate and raise public awareness and profiles of HRDs in the region. To reach these objectives, the activities of the Network will focus on a threefold strategy along the following lines: protection, capacity building and advocacy.

EHAHRDP was established in 2005 and currently brings together more than 65 nongovernmental organizations active in the protection of human rights throughout the region. Its objectives evolve from its vision of a region in which the human rights of every citizen as stipulated in the Universal Declaration of Human Rights (UDHR) are respected and upheld, and is further emphasized in its mission to maximize the protection of Human Rights Defenders working in the region and to enhance the awareness of human rights work through linkages with national, regional and international like-minded entities.

EHAHRDP seeks to strengthen the work of human rights defenders (HRDs) throughout the region by reducing their vulnerability to the risk of persecution and by enhancing their capacity to effectively defend human rights.

EHAHRDP focuses its work on Djibouti, Eritrea, Ethiopia, Somalia (together with Somaliland) and Sudan (Horn of Africa) and also Burundi, Kenya, Rwanda, Tanzania and Uganda (Eastern Africa). As of 2008 it also includes Rwanda and Burundi into its scope given their recent adhesion to the East African Community.

This project was established following extensive field research in the region, which identified the most pressing and unmet needs of human rights defenders in order to seek to overcome some of the resulting challenges. The key areas identified as needing to be addressed were:

- Insufficient collaboration amongst human-rights organizations, especially among neighboring countries;

- Resource constraints (notably material) which greatly undermine the effectiveness of the work carried out by human rights defenders;
- Knowledge gaps, in particular regarding international human rights instruments and mechanisms as well as crisis management.

4. Conclusions and Recommendations

Famines are usually caused by a lack of purchasing power or entitlements not by actual food shortage. Sometimes, famine-struck areas continue to export food. Large-scale famines have never happened in a democracy, they can only happen in authoritarian systems lacking openness of information and transparency. Dictators who are not held responsible for their actions rarely care if the vast majority of their population starve so long as they are wealthy and comfortable. The lack of openness and accountability of dictatorships is a major cause of mass famine. Democracies may sometimes experience hunger and malnutrition, but democracies never experience the kind of famine that lets hundreds of thousands or more die of starvation. A government that faces a free press and free elections is much more likely to produce quick action to avoid famine. Therefore, creating stable governments that are responsible to their population is a prerequisite for eradicating vulnerability to famine.

When the suppressed energy of the peoples of Horn of Africa is released in true freedom, there shall not be famine. The natural resources of Horn of Africa can be made abundantly productive through the full participation of the people. But as long as the people remain powerless famine will continue to be a continuous problem for which the international community will be called upon to provide relief assistance.

The peoples of Horn of Africa have to maintain their freedom. Freedom is both constitutive of development and instrumental to it: Instrumental freedoms include political freedom, economic facilities, social opportunities, transparency, and security, which are all different but inter-connected. Political rights, including freedom of expression and discussion, are not only pivotal in inducing social responses to economic needs, they are also central to the conceptualization of economic needs themselves. It is also important to support the effective functioning of democracy as formal rules are not enough without good democratic practice.

For those of us whose origin is Horn of Africa, it is important to remember that the freedom that many people in democratic countries now enjoying d did not just come about because everybody agreed. They were literally fought for by previous generations and that is how much they valued freedom. Dictatorship do not vanish willingly, freedom need to be demanded from it. We have to take up the responsibility, as others did, and struggle for freedom and civil liberties so that the Horn of Africa be a better place for ourselves and our children.

As already stated, dictators cause the most brutal sufferings up on the peoples of the Horn of Africa. The scale of humanity crises deserves to receive attention

not only by the affected people but also by the concerned people from the rest of the world. The desirable change in the Horn of Africa requires support from the democratic governments and non-governmental organizations (NGOs) promoting democratic process, rule of law and respect of human rights. Special focus need to be put on creating alliance forum. In this regard, supporting the already existing civil societies such as the East and Horn of Africa Human Rights Defenders Project (EHAHRDP) is a recommended move to start with.

Annex I: Statistical Summary of the Situation in the Horn of Africa

Description	*Djibouti*	*Eritrea*	*Ethiopi*	*Somalia*	*Sudan*	*Horn of Africa*
Population (million)	**0.82**	**4.5**	**79**	**9.83**	**36.9**	**131.1**
: Percentage of the Horn of Africa	0.63	3.43	60.3	7.50	28.1	**100.0**
: Rank comparison to the world	169	110	15	84	30	
Human Development Index	**0.495**	**0.444**	**0.367**		**0.512**	**0.384**
: Comparison to the world (rank)	151	162	171		142	
Population below poverty line (%)	**42.0**	**50.0**	**50.0**		**40.0**	**46.9**
: Comparison to the world (rank)	41	23	23		44	
Area (1000 sq.km)	23	121.3	1127.1	637.7	2505.8	**4415**
: Percentage of the Horn of Africa	0.52	2.75	25.5	14.4	56.8	**100.0**
Land use (%) : *Arable land*	0.04	4.78	10.01	1.64	6.78	**8.23**
: *Permanent crops*	0	0.03	0.65	0.04	0.17	**0.44**
: *Others*	99.96	95.19	83.94	98.32	93.05	**88.04**
Irrigable land (sq.km)	10	210	2900	2 000	18630	**23750**
Age structue (%) : 0-14 years	43.3	42.8	46.1	45.0	40.7	**44.3**
: 15-64 years	53.0	53.7	51.2	52.6	56.8	**53.0**
: 65 and over years	3.7	3.6	2.7	2.5	2.5	**2.7**
Median age (years)	**18.1**	**18.4**	**16.9**	**17.5**	**19.1**	**17.6**
Population growth rate (%)	1.903	2.577	2.58	2.82	2.143	**2.47**
: Comparison to the world (rank)	66	29	9	16	48	
Birth rate (per 1000 population)	38.13	34.2	43.66	43.70	33.74	**40.5**
: Comparison to the world (rank)	24	39	9	7	43	
Death rate (per 1000 population)	19.16	8.63	11.8	15.9	13.64	**12.6**
: Comparison to the world (rank)	9	98	42	20	31	
Infant mortality rate (per 1000)	97.51	43.33	80.8	109.19	82.43	**82.2**
: Comparison to the world (rank)	12	62	20	6	16	
Life expectancy at birth (years)	53.4	55.2	50.7	49.63	56.4	**52.4**
Life Expectancy Index	0.482	0.527	0.446	0.440	0.540	**0.475**
Fertility rate (children born/woman)	5.06	4.72	6.12	6.52	4.48	**5.63**
: Comparison to the world (rank)	28	35	11	5	39	
Urban population (%)	87	21	17	37	43	**26.4**
Education Index	**0.553**	**0.521**	**0.38**		**0.531**	**0.432**
Literacy (%) *: Total*	67.9	58.6	42.7	37.8	61.1	**48.2**
: Male	78	69.9	50.3	49.7	71.8	**57.1**
: Female	58.4	47.6	35.1	25.8	50.5	**39.3**

Source: UNDP Human Development Index Report and other Documents

Annex II(a): The major actors that have been involved in conflicts in the Horn of Africa countries between 1990 and 2008.

Country	Actors	
	Actor A	***Actor B***
Djibouti	Government of Djibouti	Front pour la Restauration de l'Unité et de la Démocratie (FRUD) – Front for the Restoration of Unity and Democracy) rebels
Eritrea	Government of Eritrea	Eritrean Jihad Movement (EJM)
	Government of Eritrea	Eritrean National Forces Alliance (ENFA)
Ethiopia	State of Ethiopia	State of Eritrea
	Government of Ethiopia	Ogaden National Liberation Front (ONLF)
	Government of Ethiopia	Oromo Liberation Front (OLF)
Somalia	Somalia Government of Somalia	Somali Salvation Democratic Front (SSDF); Somali National Movement (SNM); United Somali Congress (USC); and Somali Patriotic Movement (SPM)
	United Somali Congress/ Somali Salvation Front (USC/SSF)	United Somali Congress/Somali National Alliance (USC/SNA); Somali Salvation Democratic Front (SSDF); Somali Patriotic Movement (SPM); Rah
	Union of Islamic Courts (UIC)	Transitional Federal Government (TFG); Alliance for the Restoration of Peace and Counter-Terrorism (ARPCT)
	Transitional Federal Government (TFG)	Union of Islamic Courts (UIC); Alliance for Re-Liberation of Somalia (ARS); Al-Shaabab
Sudan	Government of Sudan	Sudan People's Liberation Movement/Army (SPLM/A); Sudan People's Liberation Movement – United (SPLM-united); South Sudan Independence Movement (SSIM); and National Democratic Alliance (NDA)
	Government of Sudan	Sudan Liberation Movement (SLA); Justice and Equality Movement (JEM); Sudan Liberation Movement (SLA)-Minawi faction; Sudan Liberation Movement (SLA)-Abdulwahid Nur faction

Source: Karanja Mbugua, Conflicts in Africa 1990-2008, unpublished document

Annex II(b)

Countries in conflict	Armed opposition movements	Active support from
Eritrea-Ethiopia	ENFA ONLF & OLF	Ethiopia Eritrea
Sudan-Eritrea	SPLM & NDA EJM & ENFA	Eritrea Sudan
Sudan-Ethiopia	ONLF & OLF SPLM	Sudan Ethiopia
Sudan-Uganda	LRA & WNBF SPLM	Sudan Uganda

Source: Wasara Samson, Conflict and State Security in the Horn of Africa*, African Association of Political Science (2002), Vol 7 No. 2, pages 39 – 60; table available on page 47.*

Statements of Diplomatic Representatives

Statement on the Horn of Africa

Marika Fahlen

Thank you Abdillahi Jama, and the Municipality and University of Lund.

Today, climate change and the state of the environment are priority global concerns because of the hard felt challenges they present to development world-wide and to livelihoods at community level.

This is particularly the case on the Horn of Africa.

In this part of the world, states fragile to climate change are also fragile states for conflict, irrespective of whether climate change is triggering conflict or not.

Scarcity of land for farming or grazing, shortage of water and depletion of forestry for fuel wood are pushing communities to the brink. This can be seen in Sudan and Somalia, in Kenya and Ethiopia, in Eritrea and Djibouti.

In May of this year, UN launched an Appeal for humanitarian assistance to 19 million people in the Horn of Africa, struck by a combination of drought and conflict.

Some of those affected will see no other solution than to give up their traditional way of life, move to other areas in-country or cross borders in search for survival and protection.

Some will take to arms to defend their traditional land from occupation by displaced communities. Others may take to arms to make sure they take control of another piece of land once their own has lost its producing capacity.

Pastoralists might be pushed into areas they have not previously considered as their grazing land.

Livelihood patterns – such as farming, cattle herding and nomadic pastoralism – are normally interdependent in a mutually thriving manner. In times of environmental crisis they turn into competitive survival business for water, pasture or farming land. Friendly co-existence gives way to fighting for living space. Countries in the Horn are awash with weapons. Problems previously resolved through dialogue are now addressed with deadly bullets.

Overall, the number of conflicts in Africa are on the decline. But not so with the low-intensity conflicts, pitting one group against another in a fierce fight over cattle, water or land. Almost all countries in the Horn experience such localised conflicts, flaring up from time to time.

For lack of deeper understanding of the complexity of such conflicts, we describe them as ethnically driven. Truly, ethnic, tribal or clan-based factors are involved. But such differences are not the root cause.

Throughout the Horn, environment degradation and other effects of climate change are mounting challenges to development.

Development for some can ruin the survival opportunities for others. It is along this route that environment issues moves from being a development issue to presenting itself as a security threat.

In Sudan, much of the peace and security discourse revolves around oil – who owns it, who controls it and how are revenues from it allocated.

But rarely is the issue of water brought forward as key for a sustainable development – and peace for that matter. Of all the ten riparian states of the river Nile, Sudan is next to Egypt the country most dependent on the water produced by the Nile.

The Nile Basin Initiative to which these ten countries belong might well prove to be a vital peace and security project for the region. On the Horn, Ethiopia, Kenya, Sudan, Uganda and Eritrea are members of the NBI. They all look to the Nile as a source for development and survival, for energy, irrigation, transport – and peaceful co-existence to mutual benefit.

In the future, we are bound to see more investments to exploit the river Nile for development. But beware, unless upstream and downstream environment consequences are considered, we might well witness protests turning violent if detrimental social development effects on nearby communities – such as flooding of land and forced displacement – are left unattended without compensation, consultation or benefits.

In Somalia, a survival resource such as charcoal not only deforest the country but also allegedly fuel the deadly conflict itself. Money from charcoal exports also helps the deadly fighting to survive. Environmental protection is invariably an issue of economic regulation.

Off the coast of Somalia, dumping of toxic waste has ruined fishing waters and the marine environment. One challenge is how to make determined care for the environment in Somalia into a project of building the elusive peace.

In several locations, we have seen how competition over scarce resources have triggered conflict. But the reverse is also true: If there is one issue around which Israel and the Palestine have cooperated it is on water management – a resource scarce for both countries and for both peoples.

I expect that this Conference will enlighten our understanding of the environment challenges in the Horn at community, country and regional levels. I also hope that this enlightenment will bring forward proposals on how to make environment management an investment in peace.

The Role of the Environment to Peace in the Horn and its Challenges

Yonas Manna Bairu

The 8th Horn of Africa Conference in Lund chose to address issues relevant to environmental peacemaking and peace building processes in the Horn of Africa. The aim of the theme is to facilitate dialogue between member states of the region, encourage and integrate grassroot environmental initiatives with long-term development plans, and network all states in the Horn on environmental peace-making and peace-building issues. Indeed as a peacemaking tool, the environment offers unique opportunities for countries of the Horn – with shared political, social, and economical challenges – to join forces towards common and positive goals. Even though the theme of the conference is not new per se, it is indeed timely to focus on a region that is characterized by both inter- and intra-state conflicts with wider regional ramifications.

I will start by a brief summary of some of the reports on the theme of the conference presented by World Watch Institute in 2005 to highlight the impact of the environment on peace. I will also mention the work by Adelhi Research on Environmental Conflicts and Regional Cooperation in the Lempa River Basin as an example that the Horn states could emulate. However, if shared environmental policies are to contribute to peace building in the region, then the external and internal challenges and impediments facing the Horn countries should be addressed as well, a critical issue the conference failed to include in its deliberation.

As noted by Conca et al. (2005)[1], even U.N. Secretary-General Kofi Annan recognized the potential critical linkages between the environment and insecurity and called for integrating environmental contributions to conflict and instability into the U.N.'s conflict prevention strategy. Similarly, with the preparation of the so-called WEHAB papers[2] by UN agencies – papers directly addressing environmental links to conflict and its prevention – UN Secretary-General Kofi Annan proposed that the

1 Ken Conca, Alexander Carius, and Geoffrey D. Dabelko (2005): Chapter 8: Building Peace Through Environmental Cooperation

2 Dennis Tänzler, Geoffrey, D. Dabelko & Alexander Carius (2004): Environmental Cooperation and Conflict Prevention at the World Summit on Sustainable Development Adelphi Research; Mesoamerican Center for Sustainable Development of the Dry Tropics, National University of Costa Rica & The Environmental Change and Security Project (ECSP) Woodrow Wilson International Center for Scholars

papers serve as the framework for working group discussions during the first week of the WSSD in 2004. As clearly stated by Conca et al. (2005), however, relatively little is known about the best design for environmental peacemaking initiatives or the conditions under which they are most likely to succeed. Without better knowledge and a stronger commitment by the UN to study current efforts, the international community may be missing powerful peacemaking opportunities in the environmental domain. What is more worrying, however, is that the UN has been effectively handicapped in implementing the results of studies it initiated itself and resolutions it passed without a blessing from the US. The US and its European allies in turn have become too great a source of environmental degradation and source of conflict in the Horn to play a positive role in peacemaking and peace building processes. It is true that environmental challenges ignore political boundaries, require a long-term perspective, encourage local and nongovernmental participation, and extend community building beyond polarizing economic linkages (Conca et al; 2005). Where cooperation does take root, it may help to enhance trust, establish cooperative habits, create shared regional identities around shared resources, and establish mutually recognized rights and expectations.

A good example for the Horn states to emulate is the Trifinio Plan[3,4] – a plan that has impacted on and contributed to regional integration, peace promotion, conflict prevention, and positive environmental change in the upper watershed of the Lempa River shared by Guatemala, El Salvador, and Honduras (Alexander López, 2004; Raúl Artiga, 2003). The work of Lopez (2004) has shown that, at the local level, the Trifinio Plan strengthened existing interstate relationships through projects that provide services such as health care. It also strengthened economic ties, particularly among marginalized areas. In addition, the Trifinio Plan has encouraged local organizations to develop projects outside the formal structure of the Plan. It is even argued that the Trifinio Plan could evolve to be a significant regional manifesto for a larger integration process of Central American states. Although the Trifinio Plan has made tangible contributions to peace promotion and conflict prevention and is unique as a tool in consolidating peace, it was partially unsuccessful in implementing an integrated strategy of stakeholder participation and produced some unintended consequences such as cross-boarder drug trafficking and became a vehicle for some actors to promote their own interests. If left unchecked, (López, 2004) there are fears that these developments could increase the potential for conflict.

There are both internal and external factors that make the Horn states unlikely to gain from the role the environment could possibly play in bringing peace and cooperation between the states and thereby benefit from the experience noted in the Lempa River Basin. First and foremost the two regions have a totally different

3 Alexander López (2004): Environmental Conflicts and Regional Cooperation in the Lempa River Basin. The Role of Central America's Plan Trifinio; Adelphi Research: Mesoamerican Center for Sustainable Development of the Dry Tropics, National University of Costa Rica & The Environmental Change and Security Project (ECSP) Woodrow Wilson International Center for Scholars

4 Raúl Artiga (2003): The case of the Trifino Plan in the Upper Lempa: Opportunities and challenges for the shared management of Central American Transnational Basins.

political, ethnic and social base. While the Lempa River Basin states are characterized by relatively homogeneous identity, the Horn States have a heterogeneous make up. As a consequence, with the exception of Eritrea, the remaining Horn states are all politically divided by religion, ethnicity or both. For example, ethnic based political parties – encouraged and supported by external forces – dominate Ethiopia and Kenya, with dire consequences as witnessed by the violence they both experienced during the elections in 2005 and 2008, respectively. Somalia – victimized by repeated foreign interventions – is immersed in a protracted civil war based on clans and sub-clan social configurations. Sudan – targeted for its vast hydrocarbon deposits – is on the verge of disintegration into two or more states using religion and ethnicity as driving forces.

The role foreign forces played in inducing instability within the Horn States is, therefore, a decisive factor that hinders the member countries from taking advantage of the shared environmental factors to bring and consolidate peace and cooperation. The encouraging political, economic and social cooperation set in motion between Eritrea and Ethiopia before the 1998 war could have been a solid base for furthering peace between the two states after a devastating long war. As elaborated by Alemseged Tesfai[5], the Agreement of Friendship and Cooperation between Ethiopia and Eritrea signed in July 1993 hoped for "gradual evolution of the two economies and societies into a higher level of integration in accordance with .....the commitment of both countries to bring about regional economic integration and political cooperation". Had the agreements been allowed to proceed unhindered then the ground would have been fertile to capitalize on the shared environmental challenges of the two states to consolidate peace and cooperation between them and in time to serve as a blue print which the other Horn states could follow. Indeed, it was this main driving factor that led to an Extraordinary Summit of IGADD Heads of State and Government held in Addis Ababa, Ethiopia on 18 April 1995, where leaders met and resolved to revitalize the dormant Authority by expanding its areas of regional co-operation. This would create a fully-fledged regional political, economic, development, trade and security entity similar to the South African Development Community (SADC) and Economic Community of West African States (ECOWAS). One of the major motivations for the revitalization of IGADD was the existence of many organizational and structural problems that made the implementation of its goals and principles ineffective. Thus, on 21 March 1996, the Heads of State and Government at the Second Extraordinary Summit in Nairobi, Kenya approved and adopted an Agreement Establishing the Intergovernmental Authority on Development IGAD.

Unfortunately, the ethnic base of the ruling regime in Ethiopia and the negative role the international community played under the influence of the US paralyzed the Agreement of Friendship and Cooperation and plunged the two states into a devastating war. Even after the formal demarcation by an independent commission, the TPLF continues to hold sovereign Eritrean territories with subtle support of the US and the dysfunctionality of IGAD, the AU and the US-dominated Security Council

5 The Cause of the Eritrean-Ethiopian Border Conflict http://www.dehai.org/conflict/analysis/alemsghed1.html

of the UN. If the environment is to play its role in peacemaking and peace building then it is crucial for the international community in general and the US in particular to stop encouraging – in the name of democracy – ethnic based elections within states and destabilizing the region by fuelling conflict between states. The imperative here is PEACE. Only peace, rule of law and mutual respect for the inviolable sanctity and territorial integrity of each nation, can bring the value added benefits that the people of the Horn deserve and have missed for such a long time.

Thank you.

Recommendations from Workshops

Ishael Siroiney

Workshop 1: Environmental peace-making and environmental peace-building – what are core causes of the environment/peace question and how has power been deployed to deal with conflicts, peace and environmental issues?

Workshop2: Identifying country level actors and issues and how people are working across borders around natural resource issues and what the challenges are.

Workshop3: Local adaptation to and coping with climate change impacts: Water, Desertification, Dumping of industrial wastes, Land use, Forests, Energy.

Preamble

All subsequent recommendations are pointless if there is no peace in Somalia. It is therefore inevitable that all neighbouring countries should unconditionally support the peace process in the region.

Recommendations

- Environmental governance should be encouraged and supported. There are a lot of relevant Multilateral Environmental Agreements (MEA) that require a lot of adminstrative input in order to be implemented. Countries in the Horn of Africa should coordinate among themselves to make their concerns audible. Even more important, MEA administrative settings should be easily accessible to those countries (putting the secretariats together).
- Environmental challenges do not recognize territorial boarders, especially in the Horn of Africa. This should be considered when developing strategies to meet these challenges.
- Patterns of pastoralism have changed with time and because of the current situation. There is a change in responsibilities between genders. This should be taken into consideration when making development projects and strategies.
- Evaluation should be made on how far it makes sense to introduce the classification "environmental refugee" into international law.
- The Western international community should respect the people of the Horn of Africa by not trying to impose their solutions on them, but rather should assist them to solve their own problems in their own way.

- It is most important that plundering of the region's natural resources is stopped; and this not only concerns fishing. The major issue at hand is to assist the people of the region to regain control of their own natural resouces.
- When giving assistance to the region, attempts should be made to address the locally rooted expertise and leave the details of implementing development projects to them. In addition, local basic education initiatives should be encourged and actively supported.
- It was emphasized that the determinants of famine could be classified into nature and dictatorship. Famine caused by nature could be alleviated through effective and inclusive policies that are based on assessment and preparedness. However, famine caused by dictatorship is difficult to address. This is due to the fact that dictatorship is associated with bad governance with bad policies, the building of wrong institutions, war and violence, and disintegration of social values that lead to poverty. Consequently, insecure communities remain indifferent to the matters related to environment that lead to deterioration of the physical environment and therewith diminish the coping mechanism to resist famine. Therefore the protection of environment and good governance are inseparable.
- Concern was raised on the existence of gross human rights violations in Ethiopia and that the protection of human life comes first in order to protect the environment. In general, severe famine and severe environmental degradation take place where there is dictatorship.
- Charcoal production that is mainly for export to the Gulf states, remains a main cause of deforestation, soil erosion, and desertification and also instigates local armed conflicts over resources. The introduction of new machines to cut trees compared to the traditional tools has further exacerbated the degradation of the already vulnerable environment. Therefore this issue should be addressed both in Somalia and in the Gulf states.
- On toxic dumping, it was pointed out that the production of the waste in industrial nations is on the increase and 90% of the toxic waste is produced by high income countries. The pressure to get ride of toxic waste has resulted in the creation of the so-called "eco-maffia". Somalia is attractive for waste dumping due to its geographic proximity; its lack of effective government; local self-interest and low awareness of the adverse effects of the toxic waste. In Somalia there is no technological means to store or process the toxic waste that affects marine life as well as human health. The action of waste dumping is unacceptable both from a legal and a moral perspective. Legally, many of the countries that are involved in waste dumping are signatories of the Basel convention on waste dumping and they should be held accountable for violating the convention. Morally, the industrial democratic nations are expected to act responsibly toward a country without government. The waste dumping, therefore, needs an international response to safeguard not only the marine ecology of the Somali coast but also the entire region.

Closing Remarks

Yakoub Aden Abdi

Mr Chairman and co-chairmans, thank you for giving me the floor.
Distinguished participants, government delegations, representatives of different organisations, private enthusiasts who came from long and far – ladies and gentleman.

It is a great honour to make closing remarks of this 8th SIRC conference on the Horn of Africa. As a doctor, I acknowledge the potential impact of environmental deteriorations, violent conflicts, and inequalities within and between nations on the well-being and health of people. Today, there are many doctors around the world who are working hard to promote good health through better caring of our environment.

As a veteran of this conference, allow me, first of all – and I think that I can speak for all of you – to thank and to congratulate the coordinator of this conference Mr Abdullahi Jama and his team for organizing such a great conference. Once again you did it remarkably. I have no doubt that the Horn-of-Africa conference in Lund have established itself as a promoter of peace.

The theme of this years conference was: The role of the environment on peace in the Horn-of-Africa.

Many of you have travelled long distances to attend in this conference and it was amazing your willingness to openly share your knowledge and experiences from your own perspectives. Knowledge sharing is about collaborating, communicating and networking. Coming to conferences is not only listening many speakers, but also making new friends and building social and scientific networks. During this conference, I got the opportunity to acquire new friends and potential future collaborators. I am sure many of you did also the same.

Once again, the Horn of Africa conference ends with great success as it did always during the past seven years. Over the past three days, it has been heartening to listen to such prominent group of scientists, individuals from governments, civil society, and the academia present, share and openly discuss on actions, experiences and challenges on the environment in the Horn of Africa. I have had a chance to listen to some of the sessions and was very pleased with the quality of the discussions that took place.

According to the World Health Organization, Thirteen million deaths annually are due to preventable environmental causes worldwide. Preventing environmental risk could save as many as four million lives a year, in children alone, mostly in developing countries. Environmental devastation is the root cause of major killer diseases in the Horn of Africa such as malaria, TB and diarrhoeal diseases. Let me remind you, that both malaria and tuberculosis were once major killers even in this

country, Sweden. Through better management of the environment and education both diseases have been eradicated long time ago.

The environmental deterioration and devastation in the horn of Africa during the past fifty years need no scientific analysis to prove it. In my little town in the north west of Somalia, as a little child I used to run through a thick forest to attend my elementary school. My father told me once that one of my uncles was eaten by a lion in the same area while he was grazing his horses long before I was born. Today, this area is completely an open space where even goats can barely survive to live in. I am sure many of you have similar stories.

Environmental devastation in the horn of Africa has both regional and international dimensions. Illegal fishing, destruction of forests, charcoal trade, confiscation of land by governments and dumping of industrial waste to mention but few were the topics discussed at the conference. All are proving to have unprecedented environmental catastrophe on the people in the Horn of Africa. In the Horn-of Africa rivers are drying up, farming areas are shrinking and wild-life is disappearing. Environmental devastation in the horn of Africa is leading to competition for resources, the pirate phenomena, armed conflicts and unprecedented refugee crisis.

Excellent presentations were made to document the link between bad governance and environmental devastation. Good governance is the process of decision-making by which decisions are implemented (or not implemented). Good governance entails participatory in decision making, accountability, transparency, inclusiveness, gender equality, respect for the human rights and the rule of law. Good governance enables to respond to the present as well as to the future needs of societies. The success of developed countries like Sweden has come through a combination of effective government, effective opposition as well as effective civil societies. A success which can be reproduced in the Horn of Africa.

Through out the conference it has been repeated again and again that no change can come from the outside, but only by supporting those within. I am encouraged by the willingness you showed during this conference to share and openly discuss actions, experiences and challenges in environmental issues concerning the Horn of Africa. The Caring for the environment needs individual as well as collective action. By only working together across borders and regions would we be able to address the most pressing environmental issues facing our region. It is high time that governments in the region take also their responsibilities and step towards good governance and partnership with each other for the sake of peace and development.

As we walk away from this historic conference I call on each and every one of us to take his/her responsibility to make the Horn of Africa a better place. Actions speak louder than words. It is time for action. Let us leave here today with a commitment for action.

Lastly, but certainly not least, please allow me to thank once again on behalf of all the participants in this conference, the organisers of the meeting and all those who in some way or the other contributed to its success.

I now declare the 2009 SIRC conference on the Horn-of-Africa formally closed. And I wish you all safe journeys as you head back to your families.