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Movement under Environmental Disasters:

The Case of Flooding and Bushfires for Selected Periods in Ghana

Paper presented at the ESF-UniBi-ZiF research conference on 'Environmental Change and Migration: From Vulnerabilities to Capabilities', Bad Salzuflen, Germany, December 5-9, 2010

COMCAD Arbeitspapiere - Working Papers
No. 97, 2011

Series on Environmental Degradation and Migration
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CENTER ON MIGRATION, CITIZENSHIP AND DEVELOPMENT

2011

Editorial

The conference "Environmental Change and Migration: From Vulnerabilities to Capabilities" was the first of a new conference series on "Environmental Degradation, Conflict and Forced Migration". It was organised by the European Science Foundation, the Bielefeld University and its Center for Interdisciplinary Research. The Center on Migration, Citizenship and Development (COMCAD), the Universities' unit responsible for scientific content and quality of the conference, has launched a COMCAD Working Paper Series on "Environmental Degradation and Migration". The new series intends to give conference participants the opportunity to share their research with an even broader audience.

The symposium focused on how environmental change impacts the nexus between vulnerabilities on the one hand and capabilities on the other hand, and how this relationship affects mobility patterns. Although the conference organizers chose to include all kinds of environmental change and types of migration, climate change figured prominently among the submissions to the conference. Therefore, the conference aimed to bring together the perspectives from climate change, vulnerability, and migration studies, and to draw conclusions about the political implications of the knowledge scientists currently have available. Toward that goal, the conference was structured along three pillars. The first concentrated on climate change and the vulnerability of certain regions and groups. It covered case studies as well as different approaches for making climate change projections and assessing the likelihood of vulnerability. The second pillar focused on empirical research on environmentally induced migration from a vulnerabilities perspective, but acknowledged the occasionally strong elements of capability within it. In this way, the aim was to learn about approaches and options to support existing capabilities. The third pillar was concerned with the opportunities and pitfalls of policy options in dealing with the future challenge of climate induced displacement, and with the analysis of dominant public discourses within the field.

The researchers invited represented a wide range of disciplines, including sociology, social anthropology, migration, conflict, gender and development studies, geography, political science, international law, and climate and environmental science. The conference was also well balanced in terms of geographic origin, gender, and academic status of the participants. The conference programme and full report can be found at www.esf.org/conferences/10328.

Bielefeld, February 2011 Jeanette Schade and Thomas Faist

Arthur, Jones Lewis and Irene Akyaa Yeboah: Movement Under Environmental Disasters: The Case of Flooding and Bushfires for Selected Periods in Ghana, Bielefeld: COMCAD, 2011

(General Editor: Thomas Faist, Working Papers – Center on Migration, Citizenship and Development; 97)

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Abstract

Globally, the migration process has, to some extent, helped to reduce population pressure on agricultural land and contributed to increasing agricultural productivity and reducing rural poverty. However, migration in many places of the world has put pressure on housing and other services, leading to the development of slums, thus having an adverse impact on the environment.

Migrating has been mostly multidirectional and mainly unpredictable in Ghana. Movement has span across local and trans-national boundaries. Of particular concern is migration motivated by environmental impacts of man-induced and natural drivers. Since the bushfires of 1983 through to the recent flooding of most of the northern half of Ghana, people have been forced to migrate from their farmstead and residence in search of places of solace. Coupled with this is the perennial flooding associated with the opening of the spillways of the Bagri and Akosombo dams in Burkina Faso and Ghana respectively.

The paper examines the incidence of migration in Ghana with particular reference to those caused by environmental drives including changes in weather patterns that result in bushfires, drought and floods. Communities in the forest and savannah zones of Ghana were investigated. Particular focus was laid on the extensive bushfires of 1983 and the northern floods of 2007 a period spanning 24 years. Questionnaire focusing the drivers, impacts of floods and bushfires were sent to the field to obtain comments from respondents. Some key personnel form the department of wildlife; meteorological stations including researchers and policy makers were engaged in focus group discussions. The participatory research approach was undertaken, where questionnaire checklist, focus group discussion and group discussions were employed to solicit information from respondents. Incidental, snow balling and cluster sampling were varied to arrive at the sample. Study area was stratified and discussed along climatic/vegetation zones. Target population of over 20million Ghanaians were considered for the study which reflected the impact of environmental drivers of migration as reflected on Ghana, an area of 238,500 sq km (92,090 sq mi), with 10 administrative regions. The study also drew some of its data from an initial research conducted on bushfires in Ghana for the period of 1983-1984. Emphasis was however based on the incidence and distribution of environmental disasters-Floods, Bushfires in Ghana.

The results showed that most farmlands in the forest and semi-forest belts of Ghana were devastated by the 1983 bushfires and majority of farmers were forced to migrate to other areas of lesser devastation such as the forest and coastal belts of Ghana. The major drivers inducing migration in most of the cases have been identified to include heavy rains (causing flooding) and drought necessitated bushfires. The impacts of bushfires in Ghana in 1983 led to the loss of large tracts of primary forest and wildlife, in areas where the bushfires occurred. Flooding was noted to have resulted in losses to farmers in the northern regions of Ghana, as it came out that many have lost vast areas of their farmlands to the floods. This culminated into the loss of cereals and food items estimated at 257,076 metric tones. Livestock farmers also lost goats, sheep and cattle to the floods. Thirty-nine irrigation dams and a host of wells were also damaged by the flood thus leaving farmers poorer and at no option but to migrate to the southern forested zones of Ghana to engage in their farming activities as well as shifting entirely from their farming activities into other viable commercial ventures such as commerce. This practice would have the tendency of destroying the indigenous sources of livelihoods in the affected local communities. However it came out that the seriousness with which the country emphasizes and addresses environmental disaster fade away with the passing of the intensity of the disaster. The results of the study also proved the need for active blend of science and technology and indigenous knowledge. Respondents indicated that society naturally have indigenous ways of protecting some national resources, through totems, taboos, best practices and punitive active, which must be strengthened. This, they believe, should be actively pursued as means to protect the environment and reduce disasters related to environmental disaster.

It was recommended that in curbing migration, the environment should be seen as a key therefore, environmental sustainability should be given prime attention and emphasis. Governmental and non governmental agencies should ensure that people's sources of livelihood are prioritized and given the needed attention. This would ensure that people who depend on the environment for their sources of livelihood become comfortable in their environment by obtaining all the needed environmental resources and governmental support to engage in their farming and fishing activities. This, obviously, would discourage their movement since it would mean the loss of their 'livelihoods' thus, their sources of existence. Institutions such as the National Disaster Management Organization (NADMO), The Red Cross Society and NGOs should concentrate on mitigating the various drivers of migration rather that delaying to plan in wait of a disaster.

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1. Introduction

The magnitude of forced displacement is often not fully realized. Although in some post-war countries large return movements have occurred, the total number of affected people continues to increase. In the early 1980s there were about 1.1 million cross-border refugees. In 1993, the UNHCR estimated that the figure had risen to 18.2 million (UNHCR, 1993). Subsequently there have been further huge cross-border movements; particularly in Africa.The effect of bushfires engineered migration on the economic and social wellbeing as well as quality of life of people is progressively becoming extensive and devastating.

Forests and woodlands have played a critical role in the movement and survival of human populations. They have been direct providers of shelter and food for people and their livestock, and of water, medicinal plants, building materials and fuel. But forests and woodlands also regulate our environment indirectly by slowing down the rate of soil erosion, controlling run-off of rainwater and storing it, and regulating its release into our rivers and lakes as well as ensuring the regulation of human habitat. Bushfires have largely been ignored in decisions affecting migration compared to tropical deforestation and desertification which have received considerable discussions.

Many reportage and discussion of bushfires disappear with the passing of the dry season. Consequently, there are very little actions and data source on the frequency, intensity, duration and effects of bushfire on migration, environment and human welfare in Ghana. Marginal attempts has also been made at addressing some of the concerns of people who have migrated as a result of the devastating impacts of environmental disasters including bushfires and flooding. The seriousness attached to concerns raised about disasters such as flooding and bushfires fade away when the severity of the disaster goes down.

In Africa, local communities had well-developed traditional indigenous knowledge systems for environmental management and coping strategies, making them more resilient to environmental change. This knowledge had, and still has, a high degree of acceptability amongst the majority of populations in which it has been preserved. These communities can easily identify with this knowledge and it facilitates their understanding of certain modern scientific concepts for environmental management including disaster prevention, preparedness, response and mitigation. The stakes are therefore high for a critical examination of environment-driven-migration for the purpose of adducing relevant long term solution that tend to

address the root to these social and economic challenges triggered by environmental disaster.

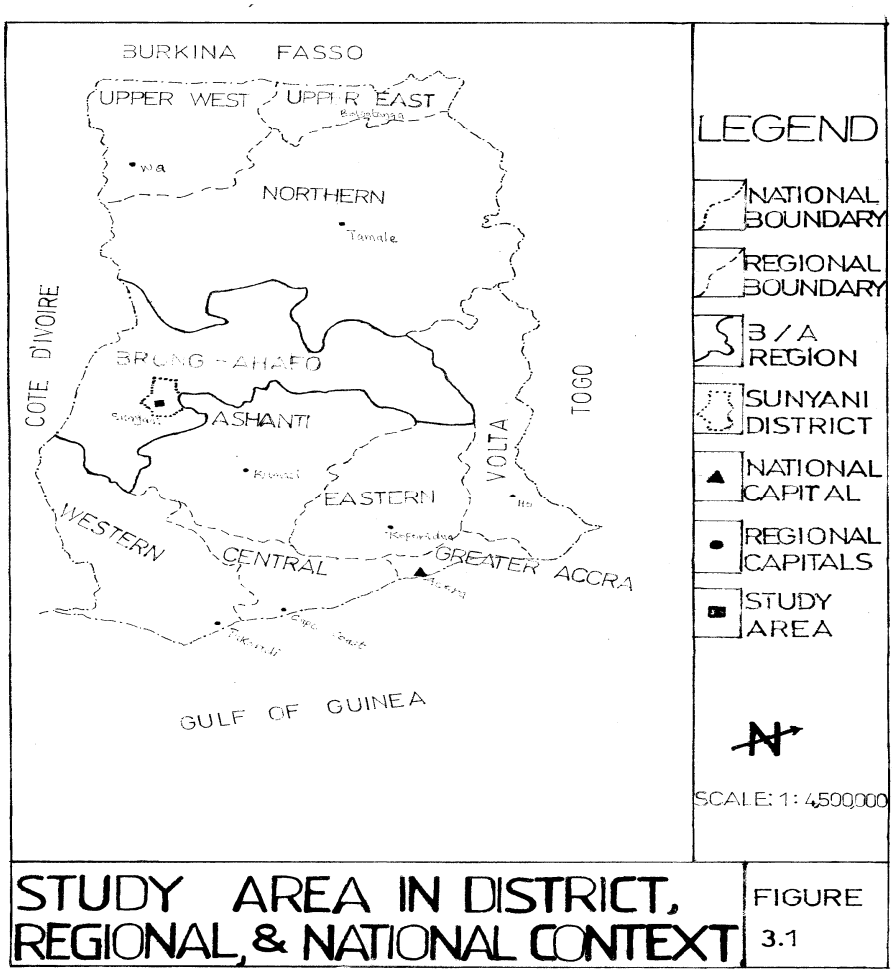
It was in respect of this that a section of the population including victims of floods and bushfires, policy makers, academics and disaster management organization were sampled for their views on 'Environmental Disasters and Migration'. A participatory research approach that integrated various forms of sampling and collection of data was used to sample the views of respondents.

2. Ghana: An Overview

The study covered Ghana, a country in West Africa and key gateway to many socio-economic activities in the West African sub-region. Ghana has a total land surface area of 238,500 sq km (92,090 sq mi). The distance from north to south is about 670 km (420 mi) whilst 560 km (350 mi) from east to the west. The country is bordered on the west by Côte d'Ivoire, Togo to the east and Burkina Faso to the north. The Gulf of Guinea of the Atlantic Ocean washes Ghana's southern shores. Ghana is generally characterized by flat plains and gently rolling hills. Forests cover 28 percent (2000) of the country's area, while 26 percent (2000) of its area is farmed (Arthur, 2002). The country is divided into five distinct geographical regions. Ghana is also divided into 10 regional administrative zones that are also subdivided into many districts (Fig 1).

Physically, the coastal plains stretch along the southern portion of the country. This stretch of land features low sandy beaches interspersed with saltwater lagoons. A forested plateau region consisting of the Ashanti uplands and the Kwahu Plateau is located inland, in the southwest and south central Ghana. The hilly Akwapim-Togo Ranges run north to south along the country's eastern border. The Volta Basin takes up most of central Ghana. Finally, high plains characterize the northern (a third) of the country. The country's highest point is Mount Afadjato, at 885 m (2,904 ft), in the Akwapim-Togo Ranges. Culturally Ghana is heterogeneous in nature with many ethnic groups that speak varied languages.

Figure 1; Political Map of Ghana



Source: Master plan, Sunyani District Assembly

3. The State of environmental disaster in Ghana

Extreme hydro-meteorological events such as flooding and drought are common across Africa, while geophysical events such as earthquakes occur predominantly in Northern Africa, along the Atlas mountain range, and in the African Rift Valley, which also experiences volcanic activity. The El Niño Southern Oscillation causes significant climatic disturbances in most parts of Africa, either inducing drought or flooding, or increasing sea temperatures leading to cyclones (GEO Regional Reports 2003).

These natural events become disasters where large numbers of people or infrastructure are affected, as has occurred over the past 30 years due to high population growth rates, espe-

cially in urban centres and drought-prone areas. Thirty-four per cent of Africa's population lives in arid areas compared to just 2 per cent of Europe's population (Findlay 1996).

3.1. Floods/ Rainstorm

Freshwater availability is one of the most critical factors in development, particularly in Africa. Some 71 per cent of the earth's surface is water. However, less than 3 per cent is fresh water, and most of that is either in the form of ice and snow in the Polar Regions, or in underground aquifers. It is thus an incentive to experience rains. Ghana is blessed to be in a geographical region that experiences high rainfall but on the other side poor factors including but not limited to urban planning and land use and cover change have resulted in perennial flooding in most cities.

Flooding has been a major source of temporal migration along the coastal areas of Ghana. Accra, the capital, has been privy to numerous perennial flooding. These primarily occur at the beginning and end of the rainy season that is, May-June and September-October rainy seasons. This type of flooding occurs after every torrential downpour and residents along major river bodies as well as on lower landscape end up being the major victims. Many of such relocate to stay with friends and family members but return when the floods subside. Respondents indicated that among the devastating disaster is flooding which have over the years induced migration in places along the White Volta where perennial flooding results in extreme loss of farmlands and livestock and to some extent human life.

Ghana has over the years experienced different levels of flooding including the recent flooding of communities along the Volta as a result of the spilling of excess water from the Volta dam. In 2010 in the northern region, for example, 2 were killed by floods in the Central Gonja district of the Northern Region where at least 25,112 people have also been displaced. This is as a result of excess spillage from the Bagre and Kampianga dams from neighbouring Burkina Faso coupled with heavy rains.

In 2007, Ghana experienced one of the devastating floods ever to occur in the history of the nation. This was witnessed in many parts of the northern half of the nation, a place considered as the food basket of the nation. Many farmlands as well as human and animal lives were lost in the ensuing floods. It was estimated that the loss of cereals and food items amounted to 257,076 metric tones. Livestock farmers also lost goats, sheep and cattle. Thirty-nine irrigation dams and a host of wells were also damaged by the flood thus leaving farmers poorer and at no option but to migrate to other areas for farmlands or engage in other commercial activities in the cities (Asare, 2008). The ensuing effect was the evacuation and

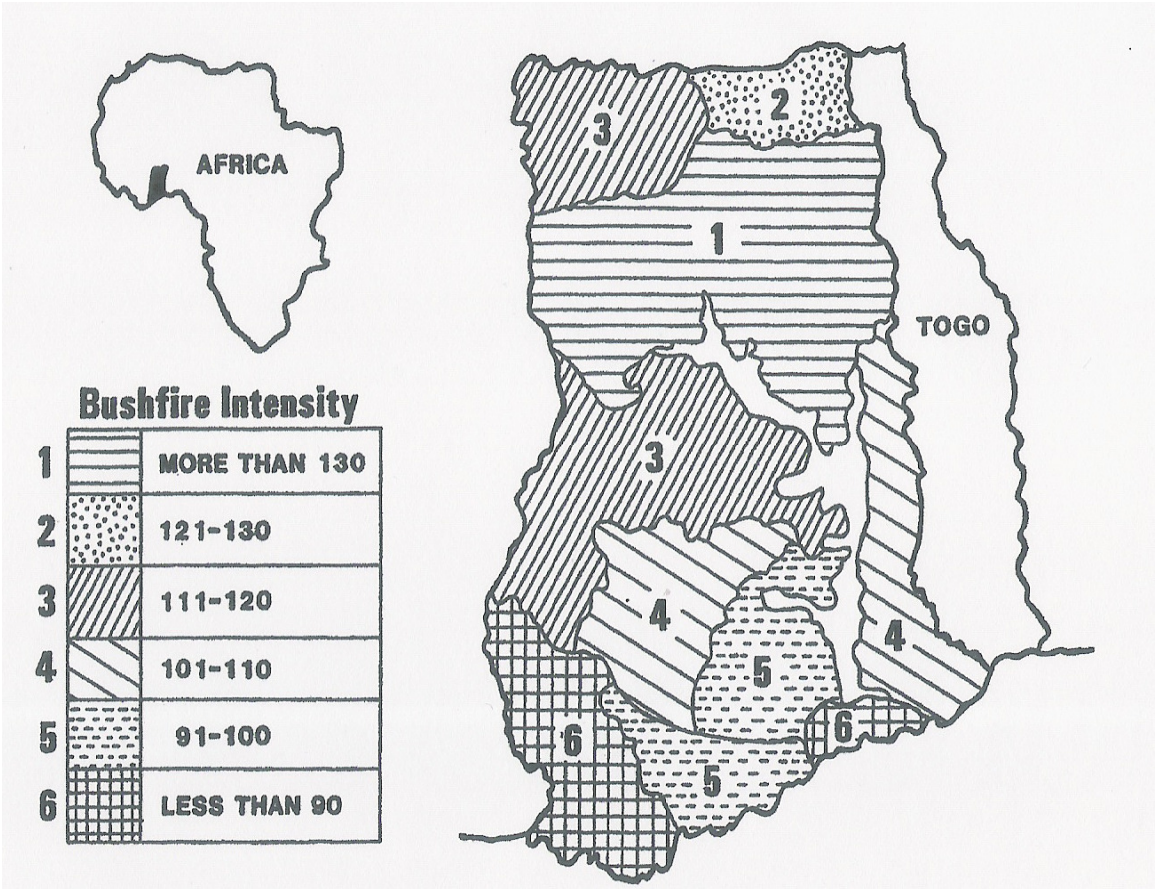
relocation of several farming communities in Northern Ghana. It took several months before the migrants could return to their lands but only to meet barren lands that had to be re-cultivated afresh. This, in addition to the rising food security worldwide, has obviously aggravated food security situation in the country with the tendency for malnutrition and famine in some deprived and rural communities nationwide. However, two years done the line the various concerns raised by affected parties, as to how the issue can be minimised, has still not been met hence the continuous scourge of the flooding menace in Ghana. Many are the people who have retired to their faith as they continue to live at the mercy of flooding which continue to force them to migrate at the height of the flooding and return when the floods subside. Their concerns have also centred on the fact that, the nation has been less supportive in providing their needs since promises to lessen their plight, after floods, have in most instances being poorly managed with some unscrupulous persons preying on their vulnerability.

3.2. Bushfires

Forests and woodlands have played a critical role in the survival of human populations. They have been direct providers of shelter and food for people and their livestock, and of water, medicinal plants, building materials and fuel. But forests and woodlands also regulate our environment indirectly by slowing soil erosion, controlling run-off of rainwater and storing it, and regulating its release into our rivers and lakes. Globally, they help to regulate the climate and protect coastlines. Furthermore, forests and woodlands sustain many of our cultural, spiritual and religious values as well as playing an important role in the socio-economic development of industrial countries and being a vital resource for the socio-economic stability of developing countries. Loss of forests and woodlands therefore means loss of a vital resource and disruption of the socioeconomic activities they support (GEO Regional Reports 2000).

In recent past, Ghana has been bedevilled with massive issues of bushfires. These have covered the very extent of Ghana including those witnessed in the forest and savannah zones of Ghana. Of critical concern has been fire destruction of cash and food crop production areas of Ghana. Bushfires as occurred in 1983-84 were the most devastating ones ever witnessed in the country (Figure 2). The extent of the bushfire was such that many had to relocate their homes and farmlands because their farmlands and villages had been destroyed by bushfires.

Figure 2: Regional distribution of bushfire outbreaks in Ghana during the 1984-85 dry Season



Source: Ampabu-Agyei, (1986), Bushfires Again, West Africa

The bushfires of 1982-83 and 1983-84, assisted by extensive drought and strong harmattan winds, resulted in destruction of precious cocoa, food crops and timber as well as a number of villages (Nsiah-Gyabaah, 1996). During the 1982-83 dry season a Food and Agricultural Organization (FAO) assessment team estimated that about 50 percent of Ghana's vegetal cover and about 35 percent (or 154,000 metric tons) of standing crops and stored cereals were destroyed by the bushfires (FAO, 1981).

Ghana experienced serious bushfires during the catastrophic Sahelian drought (1973-74) and again in the period 1984-1985. Available data on the 1984-85 bushfires in all the country's ecological zones show clearly that the Guinea and Sudan savanna areas suffered the most impact with loss of vegetation, standing crops, farms, wildlife, habitat, human lives and property. Available records show that during the 1982-83 harmattan season, about 35 per cent of crops were destroyed by bushfire. In 1984-85, about 145 bushfires were reported in the northern savanna zone alone. The crops most affected were rice and maize.

Table 1: Incidence of bushfires in Ghana (1984-85)

No	Region	Main Vegetation	Main Crops	Number of Fires (1984-85)	Percent of Total (1984-85)	Rank
1	Western	Semi-deciduous Forest	Timber, Cocoa, Cocoyam	46	4.6	10
2	Central	Coastal Savanna	Maize, Cassava	92	9.1	8
3	Greater Accra	Coastal Savanna	Maize, Cassava	68	6.9	9
4	Eastern	Semi-deciduous Forest	Cocoa, Oil palm	96	9.6	7
5	Volta	Semi-deciduous Forest	Cocoa, Root Crops	107	10.6	5
6	Ashanti	Semi-deciduous Forest	Cocoa, Timber, Cocoyam, Plantain	104	10.3	6
7	Brong Ahafo	Transitional Zone	Cocoa, Timber, Maize	110	10.9	4
8	Northern	Savanna	Rice/Millet Guinea Corn	145	14.5	1
9	Upper East	Savanna	Sorghum/Millet	125	12.4	2
10	Upper West	Savanna	Sorghum/Millet	112	11.1	3

Source: Environmental Protection Council

This development motivated the promulgation of the 1983 anti-bushfire law (PNDC Law 46) to prohibit the setting of fires except for certain agricultural, forestry and game management purposes. The purpose of the law is to protect land cover, wildlife and habitats.

This was followed in 1984 by the establishment of a National Anti-Bush Fire Committee that was charged with:

- ensuring that government is informed and advised on all matters relating to prevention, control and fighting of bushfires;

- to set up guidelines for the establishment and operation of regional, district, town and village Anti-Bushfire committees;
- to provide technical advice to these committees; and
- to monitor their activities and operations (Nsiah-Gyabaah, 1996).

The obvious impact was to reduce the spate and intensity of bushfires in Ghana. Passing the law, as expressed by respondents, has substantially reduced the problem since it has raised the consciousness and attitude of people on bushfires.

Many policy makers expressed the satisfaction with the promulgation of the bushfire way and the consequent establishment of the Nations Bush Fire Committees because it led to a massive reduction in bushfire cases. This, though, was not achieved immediately until after a massive bushfire campaign that drove home the need to protect and conserve nature and its resources. However, respondents were also of the view that, the isolated cases of bushfires visible in Ghana today has been the result of the laxity in carrying our bushfire campaigns as this was very instrumental during and after the 1983-1984 bushfires in Ghana.

4. Vulnerability: Who and where

The world over continues to experience all forms of environmental disasters such as those caused by earth movements and terrestrial transformations. Of greater concern are those that occur in places of human habitation and influence. Ghana has not been isolated from the incidence and impacts of environmental disasters such as floods, bushfires and drought. Many are those who relegate the menace to the background due to its frequency, but the devastating effect on women and children calls for a major policy shift in respect of addressing the issue.

Bushfires are mainly prevalent in the savannah, forest and forest transitional zones of Ghana. Places above Salaga (Lat 8^0N), having a single rainfall season and lying within the savannah zones, are privy to many cases of bushfires and flooding. For most parts of the year (October-May) it experiences the tropical continental air mass hence a drier weather condition. A little unprotected fire such as that caused by farmers, hunters and gatherers of firewood is enough to spark a destructive bushfire. During the rainy season too, most of such areas turn waterlogged with an attendant increase in the potential for flooding as the clayey soil creates a catalyst for such destructive situation. Incidentally these areas of bushfires incidence inhabit most of the rural communities which also, in most cases, serve as the food producing areas of the country.

Further south, the logic would have meant a better condition that is free from flood and bushfires but evidence shown by respondents showed that the opposite rather occurs. The Wet Tropical and Semi-Wet Tropical climatic zones fall within this zone and they mainly experience two peak rainfall seasons. The zones also witness most of the farming activities in the country. Farming is mainly prevalent in the rainy periods but it is quiet lesser in the latter season (September-October) due to the shorter period of the rains. A lot of bush burning occurs in preparation for the farming season and this has the tendency of assuming uncontrollable dimensions in the latter season due to the dryness of the environment at the time. The situation has been aggravated by the perennial nature of bushfires as this has reduced most of the primary forest into savannah woodlands thus making them susceptible to future incidence of bushfires.

Comparatively, flooding assumes a lesser dimension in the forest zones. Cases of intensity are experienced as one get closer to the coast as well as the plains along the major rivers in the northern parts of Ghana. As a result of poor planning of cities, development of slums and the flat nature of the landscape, the coastal settlements such as Accra and Tema, experience perennial large scale flooding. In recent times too, major cities such as Kumasi and Takoradi have started to face the challenge of flooding due to poor spatial planning and poor waste management, as the filth tends to engulf many drains, thus blocking the flow of rains that pass though the drains. The adverse impacts of such floods include the destruction of life and property with the consequent movement of people in search of places of solace. The low lying areas in the northern half of the nation is also not spared the devastation of flooding. When dams are spilled in Burkina Faso, places along the White Volta get flooded with the major damage being caused to farmlands, livestock and other property.

4.1. Bushfires, Floods and Migration

Migration in Ghana occurs in many forms. While some may have social and economic roots, others are the result of various environmental factors including incidence of disaster such as bushfires, floods, drought and famine. In Ghana, migration may occur at various times of the year and may involve both internal and external forms.

Internally, there are those who move from villages to urban communities in search of employment opportunities as well as better social and economic enticements that such urban areas offer. The communities of Fiema, Dotobaa, Bofie and Nchiraa are middle-sized predominantly food crop farming communities located in the northern forest-savannah transition zone. While the region is still one of the least densely populated areas in the zone there has been significant population increase and an influx of migrants. Population in most of these

areas are under 5000, a characteristics of a rural area (Ghana Statistical Service, 1995). Of equal importance is the regular movement of the youth from the Northern to the Southern parts of Ghana in search of better forms of livelihood. Many also move in search of greener pastures abroad. Of critical concern is the menace of brain drain that mainly involves the health professionals.

The state of the environment has been known to also contribute extensively to the issue of migration in Ghana. Such factors are known to include those driven by bushfires, floods, pastures, drought and famine. These are mainly case sensitive as the peculiar situation mandates the type and nature of movement.

Climatic changes and widespread bush fires in the 1980s caused extensive devastation of cocoa farms in Ghana. Between 1981 and 1985, more than 100,000 tonnes of cocoa were lost each year, given the fact that traditional cocoa varieties of Amelonado and Amazon take between six and eight years to mature. Many farmers whose crops were destroyed were forced to migrate to the hinterlands of the forest belts where comparatively the destruction to vegetation was minimal. New farmlands had to be tilled and with the difficulty of land availability and appropriate climatic conditions, the situation became much difficult for the migrant farmers and their families. Crop production further reduced and the obvious was famine that was experienced in most facets of the Ghanaian community.

The passing of every rainy season results in the resurfacing of the ugly event of floods along the coast which consequently lead to some forms of internal migration. People including farmers and their households are moved by the incidence of floods. In the three northern regions for instance, the recent flood caused the relocation of many farm labourers and their families. They normally move and leave behind their crops and farm animals untended. Migration in farming areas in Ghana has the propensity to threaten food security in the country. Floods in Northern Ghana have resulted in the loss of hundreds of metric tonnes of cereals. Livestock including cattle were also not spared by the devastating floods that recently hit the area.

The Ghana government has been particularly helpful in reducing the socio-economic imparts of environmental disasters on the people. Through its mitigation policies it has provided an amount of 7million Ghana cedis, an equivalent of 7 million US dollars, including others towards the mitigation of the impacts of floods on the people of the three northern regions and Keta of Ghana. The project is to be managed by the government in collaboration with the Volta River Authority (VRA), a body overseeing hydroelectric power generation in Ghana (Donkor, 2008). In another development the European Union recently signed a 600,000 euro

emergency pact with Ghana through the World Health Organization (WHO) to assist in providing food aid to people affected by the 2007 floods in the three northern regions of Ghana. The support, which is to be administered by WHO, is primarily to deal with the humanitarian needs required by the affected people. Such a support would include the provision of the nutritional needs of women and children who incidentally had the highest casualties.

5. The way forward

Migration has taken a different dimension worldwide. Previously, migration was considered on the basis of movement of large communities over both cultural and geographical boundaries. Now, the tables have turned in favour of environment induced migration. In recent times, the margins of migrations have been largely driven by disasters including drought, bushfires, earth tremors, hurricanes and tsunamis. This obviously calls for a refocus of the state, trend and approach to addressing the issues of environment induced migration.

The environment is critical and vital to mitigating some of the challenges involved in migration. The protection and conservation of the environment, though not given much attention as deserves, is the one major factor capable of reducing the rate of migration caused by factors including but not limited to bushfires, floods and earthquakes. It is therefore, important that policy implementers such as the Environmental protection Agency, Ghana drive environmental conservation into its mainframe national and international policies.

Institutions such as the National Disaster Management Organization (NADMO), The Red Cross Society and NGOs should concentrate on contributing to mitigating the various drivers of migration rather that delaying to plan in wait of a disaster. Such bodies should as a matter of agency concentrate on education on attitudinal change that in effect also promotes environmental best practices. such actions may include tree planting along streams, draining of drains and adopting of better and improved farming methods that frown upon some negative traditional farming methods such as the ‘slash and burn’.

It is also important to emphasize that research institutions should be motivated to periodically review the state of our environment. Government funding for undertaking research and development in institutions including universities should be increased as this would enable such bodies to undertake in-depth research that would improve the social and economic capacity of the people. As these research bodies become abreast with the present state of disasters and challenges, it would ensure that the nation stays focused on the environmental drives of migration to maintain an environment that performs effectively as a sink for waste, source of habitat and life support system.

In the traditional African worldview, environmental resources (land, water, animals and plants) are not just production factors with economic significance but also have their place within the sanctity of nature. Certain places have a special spiritual significance and are used as locations for rituals and sacrifices, for example, sacred grooves, shrines, mountains and rivers. These locations are quite often patches of high biodiversity which are well conserved and protected by the community. For the traditional people of Northern Ghana, gods, spirits, shrines, ritual crops and animals, food items and cash crops are all inter-related. It is important to mention that the collaboration between traditional leadership and national government should be strengthened as this would enable the application of indigenous knowledge in preventing and mitigating the challenges of migration that are induced by environmental disasters. Indigenous knowledge is an essential element in the development process and livelihoods of many local communities. A major challenge that African countries continue to face is how to reconcile indigenous knowledge and modern science without substituting each other, respecting the two sets of values, and building on their respective strengths.

The policies articulated in documents such as the Stockholm Declaration and Programme of Action, the World Conservation Strategy, Our Common Future, the Rio Declaration and Agenda 21, have driven the environmental agenda in the period 1972-2002. Binding legal regimes, some from before 1972 now form the body of international environmental law; provide the appropriate muscle necessary to encourage compliance. Along with the policies and legal frameworks, the past three decades have also seen a proliferation of environmental institutions across public and private sectors, and civil society in general (UNEP, 2006). These lessons are there for us to envisage and it should guide the nation to appropriately manage the environment since this would assist the nation in creating an environment that accommodates all.

Ministries or Departments of environment are now common in all regions. Sustainable development and environmental standards have become part of the *lingua franca* of major corporations, with many now making annual environmental reporting part of the corporate agenda. Civil society has come of age, recording many successes at different levels. It is therefore relevant that all stakeholders of the environment pursue an all inclusive approach with an interdisciplinary focus to ensuring that the environment becomes safer for habitation and performance of its life support functions.

6. Conclusion

The signs of migration, including internal and national, is visible in Ghana. Such include brain drain and people pushed out of their respective abodes by the incidence of floods and bush-

fires. Many of the movements occur in the disaster stricken communities, including those of the forest belt and Northern halves of the nation, where migration is driven by bushfires and floods respectively.

Most farmlands in the forest and semi-forest belts of Ghana were devastated by the 1983 bushfires with majority of farmers being forced to migrate to other areas of lesser devastation such as the coastal belts. The major drivers of the movement identified included heavy rains and drought necessitated bushfires.

The impacts of migration resulted in Ghana loosing a substantial part of the primary forest and wildlife. Farmers in the three northern regions of Ghana were noted to have lost vast areas of their farmlands to flooding. This culminated into the loss of cereals and food items estimated at 257,076 metric tones. Livestock farmers also lost goats, sheep and cattle. Thirty-nine irrigation dams and a host of wells were also damaged by the floods thus leaving farmers poorer and at no option but to migrate to other areas for farmlands or engage in other commercial activities in the cities.

With modernization, the contemporary world has relegated issues of migration into the background. Most countries along the west coast of Africa have failed to implement policy directives on migration since the perception is that migration is no longer an issue requiring a critical outlook. This has resulted in many movements that are given less prominence hence the creation of an unnecessary social and economic burden on migrants and the nation as a whole.

References

Arthur, A.C., (2002). "The Impact of Development control systems on land use in Sunyani", A special study submitted to the Department of Planning Kwame Nkrumah University of Science and Technology, Kumasi in partial fulfilment of the requirements for the degree of Bachelor of Science in Planning 2002.

Ampadu-Agyei, O. (1986). Bushfires Again, West Africa, pp.462–463.

Asare E.G., (2008), 257,076 metric tonnes of food lost in Northern Floods, DAILY GRAPHIC, 13 Feb, pg 14.

Donkor Michael, (2008), GH 7m for Flood Victims, Daily Graphic, 15 September, 2008, pg. 1, Graphic Communications Group Ltd, Accra.

www.graphicghana.com 2008

FAO (1981). Problems of forest conservation in Africa. Food and Agricultural Organisation.

Findlay, A.M. (1996). Population and Environment in Arid Regions. Policy and Research Paper No. 10, Paris, International Union for the Scientific Study of Population.

Ghana Statistical Service (1995) Migration research study in Ghana: internal migration. Volume 1. Accra: Ghana Statistical Services.

Nsiah-Gyabaah, K. (1996). Bushfires in Ghana, IFFN no 15, p. 24-29.

Sunyani District Assembly, (1996). Medium – Term Plan 1996 – 2000. Sunyani, Development Planning Unit.

UNHCR, (1993) The state of the world's refugees, Penguin, New York.

UNEP (2000), GEO Regional Reports.

www.unep.org 2006, GEO Regional Reports, UNEP

UNEP (2003), GEO Regional Reports

www.unep.org 2006, GEO Regional Reports, UNEP

UNEP (2003), GEO Regional Reports

www.unep.org (2006). GEO Reports: Analysis and Outlooks, UNEP