AN ASSESSMENT OF THE EFFECTS OF THE BAGRE HYDRO DAM SPILLAGE ON GHANA-BURKINA FASO RELATIONS

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DECLARATION

I, Mumuni Kofi Amuquandoh, do hereby declare that this work is entirely by my personal effort, supervised by Dr. (Mrs.) Afua Boatemaa Yakohene. I further declare that all the works that have been consulted or quoted have been duly acknowledged. I also declare that this dissertation has not been presented either in part or in whole for any other degree elsewhere.

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DATE.....	**DATE.....**

DEDICATION

I dedicate this piece of work to Mr. J. C. ACKON, Director General, Research Department of the Ministry of Foreign Affairs and Regional Integration.

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LIST OF ABBREVIATIONS

ACO	-	Aliens Compliance Order
BOST	-	Bulk Oil Storage and Transportation
CDB	-	Cattle Development Board
DGH	-	General Directorate of Hydrauliques
EOC	-	Emergency Operations Centre
GPHA	-	Ghana Ports and Harbours Authority
Hon.	-	Honourable
IRIN	-	Integrated Regional Information Network
ITCZ	-	Inter-Tropical Convergence Zone
JTC/IWRM	-	Joint Technical Committee on Integrated Water Resources Management
KNUST	-	Kwame Nkrumah University of Science and Technology
MFA&RI	-	Ministry of Foreign Affairs and Regional Integration
MOFA	-	Ministry of Food and Agriculture
MoU	-	Memorandum of Understanding
NADMO	-	National Disaster Management Organisation
NDC	-	National Democratic Congress
NLC	-	National Liberation Council
NPP	-	New Patriotic Party
NRC	-	National Redemption Council
PJCC	-	Permanent Joint Commission for Cooperation
PNDC	-	Provisional National Defence Council
SMC	-	Supreme Military Council
SONABEL	-	Société Nationale Burkinabe d'Electricité

VBTC	-	Volta Basin Technical Committee
UERCC	-	Upper East Regional Coordinating Council
UNDP	-	United Nations Development Program
VBA	-	Volta Basin Authority
VRA	-	Volta River Authority
WANI	-	Water and Nature Initiative
WRC	-	Water Resources Commission

TABLE OF CONTENTS

CHAPTER TWO:
BRIEF OVERVIEW OF GHANA-BURKINA FASO RELATIONS FROM 1957 TO 2016

CHAPTER THREE:
ASSESSEMENT OF THE EFFECTS OF THE ANNUAL WATER SPILLAGE FROM THE BAGRE DAM, ON THE AFFECTED COMMUNITIES ALONG THE WHITE VOLTA, AND ITS LIKELY IMPACT ON GHANA AND BURKINA FASO RELATIONS

CHAPTER FOUR:
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

ABSTRACT

Ghana's relations with Burkina Faso has been cordial. The two countries are closely linked by blood ties of some ethnic groupings along their common border and more so they share the Volta River Basin which is indispensable in their development drive. The Volta River Basin serves as a major source of energy and transport in Ghana. Ghana-Burkina Faso relations has, however, been threatened since the completion of construction of the Bagre multipurpose dam on the White Volta sub-basin in Burkina Faso in 1992. Ghana has accused Burkina Faso of excessive water withdrawal, which leads to low water in the Volta Lake and affecting the operations of the Akosombo hydro dam in Ghana. Heavy rains resulting from the effects of climate change has compelled Burkina Faso to annually open the flood gates of its dam, which has always inundated communities downstream in Ghana along the White Volta River and its tributaries, with devastating consequences. The management of the Bagre dam could serve as a potential source of conflict, especially if unilaterally managed, or as a source of promotion of cooperation between the two countries if well managed through collaboration. Through qualitative research, this thesis looks at key issues such as the menacing impact of the Bagre Dam spillage and its attendant consequences in downstream Ghana. It also investigates the effects of the foregoing on Ghana-Burkina Faso relations and interventions taken in order to minimise any possible tension over the operations of the Bagre Dam. Through the use of interviews and focus group discussions conducted in the Bawku West, Talensi and Binduri Districts and the Bawku East Municipality of the Upper East Region, as well as interviews with other relevant stakeholders, the research findings show that local/national initiatives and inter-state collaborations have led to cooperation between Ghana and Burkina Faso contrary to media reports and fears of some Ghanaians, labelling the Dam as a potential source of conflict between the two countries.

CHAPTER ONE

RESEARCH DESIGN

1.0 Background to the Study

A dam is a man-made structure built across a river. Most dams are built to control river flow or improve navigation. However, some dams are built to produce hydroelectric power, and can be referred to as hydroelectric dams.[1] A hydro dam is used for the generation of electricity for industrial development of a nation as well as for agricultural purposes.

In inter-state relations, there are, however, several challenges associated with dams, such as tension with downstream users who may complain of water withdrawal as a result of the creation of dams: pollution of downstream; or floods caused by opening of spillways. For example, in 2014, Egypt threatened to go to war with Ethiopia if the latter did not halt ongoing construction of a hydroelectric dam on the Blue Nile.[2] Egypt, which relies almost exclusively on the Nile for farming, industry and domestic water use, fear that the construction of the dam could result in unbearable consequences such as a reduction in water quantity for agriculture purpose in its territory.[3] This has resulted in tripartite approach to resolve the issue. Egypt, Ethiopia, and Sudan reached an agreement and employed the service of two French firms, BRL and Artelia to carry out studies on the potential impact of Ethiopia's Grand Renaissance Dam on the flow of the Nile.[4]

Again, from April 1989 to July 1991, two Senegalese peasant farmers were killed over grazing rights along the Senegal River, which forms a boundary between Mauritania and Senegal. This sparked smoldering ethnic and land reform tension between the two countries. Several hundreds were killed as civilians from border towns on either side of the river attacked each

other, resulted in diplomatic problems between the two countries.[5]

In the late 1980s, Burkina Faso, indicated its intension to construct a dam for the purposes of irrigation and the generation of electricity. The country eventually built the Bagre Hydro Dam in 1992 on the White Volta sub-basin of the Volta Basin, without any consultation with Ghana which is downstream of Burkina Faso.[6] The White Volta is a tributary of the Volta River Basin which is the ninth largest Basin in Africa, encompassing approximately 400,000 km² in area and generates more than 32,000 million cubic meters of water in mean annual runoff.[7] The trans-boundary water basin which is located in West Africa is the principal water source for millions of people in six (6) riparian states. It lies mainly in Ghana (40%), and Burkina Faso (43%), with the remaining 17% in Benin, Cote d'Ivoire, Mali and Togo.[8] The Volta River is indispensable in the relations of Ghana and Burkina Faso as one state is upstream (Burkina Faso) while the other is downstream (Ghana) and the activities by the upstream state directly or indirectly affect those of the downstream state.

Ghana benefits immensely from the Volta River. In 1966, Ghana built the Akosombo Dam, which is a 912-megawatt hydropower plant and the most significant hydraulic structure on the Volta River. Ghana built another hydropower plant in 1982 in Kpong, and in August 2008, again started the construction of a 400-megawatt hydropower dam at Bui on the Black Volta.[9] Ghana also uses the Volta River for transportation and tourism purposes. The Dodi Princess, for example, is used for tourism from Akosombo to the Dodi Island. The Bulk Oil Storage and Transportation Company Limited (BOST) of Ghana transport petroleum products from Tema to Buipe in Northern Ghana through the Volta River, for distribution and for further transportation to Burkina Faso by road.

However, the construction of the Bagre Dam by upstream Burkina Faso and the recurrent annual flooding it causes in downstream Ghana, as a result of its spillage, could constitute an immense source of potential tension between the two countries.[10] The Bagre Dam has a water holding capacity of 235 metres,[11] beyond which extra water must be let out. Due to increased rains over the years since 2007, possibly resulting from the effects of climate change, the Dam has always received more water that threatens to exceed its capacity, thereby compelling its managers to spill excess water to avoid it breaking its banks.

For example, in August 2007, the government of Ghana had to declare a state of emergency in the Upper East, Upper West and Northern Regions due to the devastating impact of floods on Ghanaians living on the banks of the White Volta River susceptible to the effects of the opening of the Bagre Dam. This was a unilateral decision taken by Burkina Faso thereby giving Ghanaians no chance to prepare and evacuate from the affected areas. The affected communities became inaccessible because roads and bridges were destroyed. Many lives, both human and livestock were lost, large areas of farmlands were destroyed and businesses were swept away by the floods. Unfortunately, grappling with the impacts of the spillage from the Bagre Dam has become an annual affair with its associated devastating consequences on these vulnerable populations thereby exacerbating their already precarious socio-economic conditions. [12]

As a result, some Ghanaians have accused Burkina Faso of deliberately causing harm in Ghana.[13] For instance, K. B. Asante, a retired Ghanaian diplomat, after the impact of the 2007 spillage on Ghana, noted that Ghana should have been informed of the intention of Burkinabe authorities to open the spillways of the Dam.[14] In response, the Société Nationale Burkinabe d'Electricité (SONABEL), through the Burkinabe Embassy in Ghana, recalled an agreement

in which it was to regularly inform the Volta River Authority (VRA) through the Ghana Embassy in Burkina Faso two weeks before the opening of spill gates of the Bagre Dam.[15] SONABEL claimed to have respected the agreement and could not be blamed.

According to Niasse, [16] the alleged water releases from dams in Burkina Faso (particularly the Bagre Dam) resulting in floods in Northern Ghana as was the case in 1999 is a potential source of conflict between Ghana and Burkina Faso. Even though this situation has not resulted in any major conflict between Ghana and Burkina Faso, it could be a potential source of tension between the two countries if appropriate agreements are not properly respected and the situation should escalate.

Despite the Bagre Dam's ability to strain relations between the two countries, permanent measures to address the situation are not being adopted, rather *ad hoc* approaches to solving the problem are being adopted on annual basis. For example, in recent years arrangements have been made between the authorities of Burkina Faso and Ghanaian, in which the progressive water level in the Bagre Dam is expected to be communicated to Ghanaian authorities through the Ghana Embassy in Burkina Faso. This is to enable the Ghanaian authorities educate the communities along the banks of the Volta River in Ghana, and to evacuate them on time before any spillage, if the need be.[17]

However, the construction of the Bagre Dam could also be a source of increased cooperation between the two countries. According to Wolf, while press reports on international waters often focus on conflict, there are encouraging stories throughout the world on how water also induces cooperation between nations even when they have differences in other areas of their international relations. Wolf explained that countries that share a water basin cooperate on

water issues, even when they do not cooperate over other issues. He notes that river basins act as both an irritant and a unifier. As an irritant water can make good relations bad and bad relations worse. Despite the complexities however, transboundary river basins with relatively strong institutions can act as a unifier.[18]

1.1 Statement of the Problem

Co-operation between Ghana and Burkina Faso is thought to be a matter of necessity. Politically, there is great need for co-operation between Ghana and Burkina Faso as neighbours and countries sharing some resources. What happens in one country has the potential to affect the other. Since 2007, it is clear that spilling of excess water in the Bagre Dam has become an annual affair. It affects the livelihood of the people along the White Volta Sub-Basin of the Volta Basin, especially, communities in the Talensi, Bawku East, Binduri Districts and the Bawku municipality in the Upper East Region of Ghana.

Thus, the problem of this research is, how has the relations between Ghana and Burkina Faso helped in addressing the menacing impact of the Bagre Dam spillage in Ghana since 2007?

1.2 Research Questions

The research seeks to answer the following questions:

- What are the effects of the Bagre Dam on the affected Ghanaian population?
- How has the Bagre Dam Spillage impacted on Ghana-Burkina Faso Relations?
- What are the measures being taken by both Ghana and Burkina Faso to mitigate the effects of the spillage on the communities along the White Volta Basin?

1.3 Objectives of the Study

The general objective of the research is to ascertain whether the annual water spillage from the Bagre Dam and its attendant consequences has an effect in the relations between Ghana and Burkina Faso. The specific objectives are:

- To ascertain the effects of the Bagre Dam on the affected Ghanaian population.
- To analyze the effects of the Bagre Dam Spillage on Ghana-Burkina Faso Relations.
- To examine the measures being taken by Burkina Faso and Ghana to reduce the impact of the annual spillage on the communities.

1.4 Scope of the Research

Formal relations between Ghana and Burkina Faso gained root after independence by both countries in 1957 and 1960 respectively. This study is however situated within the scope of relations between the two countries from 1992 to date, in the context of the construction of the Bagre Hydro dam and the subsequent annual water spillage.

1.5 Rationale of the Study

The research would serve as a useful reference for policy-makers in both Ghana and Burkina Faso with regards to issues arising from the management of the trans-boundary river basin.

1.6 Hypothesis

The use of Cooperation as a tool in Ghana-Burkina Faso relations would help address the negative effects caused by the Bagre Dam spillage on the livelihoods of affected Ghanaians.

1.7 Theoretical Framework

The study employs the Cooperation Theory and Game Theory to analyze the effects of the

Bagre Dam spillage in Ghana and Burkina Faso relations. There are various schools of thought on these theories, but for the purpose of this study, the theories are viewed from the perspective of bilateral relations based on mutual benefit and restraint from conflict.

The Cooperation Theory, is a facet of Idealism, which emphasizes international norms and standards for the resolution of problems and conflict in the international system, and cooperation among states.[19] International cooperation is the voluntary adjustment by states of their policies so that they manage their differences and reach some mutually beneficial outcome. Keohane posits that cooperation involves mutual adjustment and can only arise from a conflict or a potential conflict.[20] Cooperation is encouraged in general by existence of common interest and will not occur unless states perceive some common interest in cooperating.

Cooperation does not signify an *ad hoc* interaction, but a long term committed engagement by states on issues in which joint action must be taken. When they cooperate, they benefit from the creation of new values, material or non-material. Cooperation arrangements among nations has become essential. While cooperation may not always be beneficial depending on the issues and one's vantage point, attempts by states to reduce the negative effects of their policies on one another can improve the general welfare.[21]

Helen Milner,[22] notes that the neglect of domestic politics is one weakness of theories of cooperation. The theories of Cooperation, as she points out, are concerned with the international systemic conditions that affect possibility of cooperation, while neglecting the influence of domestic factors. To Milner, this international assumption is problematic, in that it rest on a series of unexamined assumptions about domestic politics that are crucial to the

results. Important assumptions are made about three areas; the determination of the national interest of states, the strategies available to states to alter systemic conditions, and the capacity of states to ratify and implement cooperation arrangements.[23] It is therefore difficult, if not impossible, to explain any of these factors referring solely to international factors. Consideration of domestic politics seems essential for understanding international cooperation for three reasons. First, domestic politics tells us how preferences are aggregated and national interest constructed. Second, domestic politics can help explain the strategies states adopt to realize their goals, and third, the final step in establishing cooperation agreement occur when domestic actors agree to abide by the terms negotiated internationally.[24]

The cooperation theory and game theory are interrelated. The basic problem that cooperation theory addresses is the common tension between groups which arise from shared resources. The Prisoner's Dilemma used in game theory embodies this tension in a particularly simple and compelling manner. For that reason, the Prisoner's Dilemma has become the foundation for most work in Cooperation theory, across a wide range of disciplines. Regardless of the theoretical details, virtually all of cooperation theory employs game theory as the basis for analysis. Game theory begins with a set of actors, each of whom has a set of choices. When the players each make their choice, there is an outcome that is jointly determined by the choices of the players. The outcome determines the payoffs to the players.[25]

The game theory is a decision-making approach based on the assumption of actors' rationality in a situation of competition. Each actor tries to maximize gains or minimize losses under conditions of uncertainty and incomplete information, which requires each actor to rank order preferences, estimate probabilities, and try to discern what the other actor is going to do.[26] Originally, game theory addressed zero-sum games, in which one person's gain results in losses

for the other participants. In a two-person zero sum game, what one person gains, another person loses. In a two person non-zero sum game or variable sum game, gains and losses are not necessarily equal, it is possible that both sides may gain. This is sometimes referred to as positive sum game. The game theory is the basis of how collaboration among competitive states in an anarchic world can be achieved.[27]

Game theory has been used many times in the past, during the settlement of situations generated by the effects of shared water resources among countries.[28] The theory incorporates all factors that can characterize the conflicting situations as each side seeks the maximization of its payoff and the players' behavior is initiated by its targets and values.[29] Game Theory aims at the study of four basic elements. These are:

Players: normally consisting of the decisions makers,

Interaction: the choice of one player affect the choices of the counter player,

Strategy: each player holds a strategy based on the players' interaction, and

Rationality: the players' choices are characterized by rationality.[30]

All the above elements are often found in issues concerning the management of shared water resources. The interested countries as players with specific options and take decisions according to the payoffs that corresponds to each combination. In most cases, the players have opposite interest as the benefit of one player, entails loss for the counter player. It is evident that the choice of one country affects the other in the case of upstream-downstream relations.

The assumption of traditional game theory that players are rational, has been widely challenged. Among the critics is Herbert Simon, who emphasizes that people have limited knowledge of their situations, limited ability to process information, and limited time to make

choices. People are therefore likely to use rules of thumb rather than detailed calculation; more likely to experiment than try to determine an optimal response; and more likely to imitate someone who seems to be doing well rather than rely completely on their own experience.[31] It should be noted that in recent years, game theory as a whole has begun to de-emphasize the assumption of rational actors, and studied various forms of adaptive behavior.[32]

Notwithstanding the criticisms levelled against the theories of cooperation and game, they are relevant to the study, as their employment assists the researcher to analyze the management of upstream-downstream relationship in the context of the problems posed by the Bagre Dam. Cooperative and Game Theories are useful as they provide a range of solutions that are likely to satisfy all players in the game, in this case Ghana and Burkina Faso, and provide methods to fair gains of that cooperation to all participating stakeholders.[33]

1.8 Literature Review

1.8.1 Cooperation in Transboundary Water Management

According to Ayibotele,[34] transboundary cooperation between Burkina Faso and Ghana as they share the Volta Basin is necessary, to avoid upstream/downstream conflict. He noted that Future integrated development of the Basin should purge crude approaches and institutionalize the process of consultation, cooperation, collaboration and coordination in the Volta basin among the riparian countries. Similar arrangements should be made within the borders of Ghana and Burkina Faso, as an effective joint management of the Volta River is vital. Ayibotele touched on the need for good relations among the riparian states of the Volta Basin through effective management. He goes further to recommend cooperation between Ghana and Burkina Faso since the river drains through a greater part of the two countries and concluded that good relationship between upstream and downstream countries is indispensable to the effective

management of the Volta River. Ayibotele, however, did not specifically look at the annual spillage of the Bagre Dam and the effects it may have on the relations between Ghana and Burkina Faso.[35]

Wolf,[36] shares the same view in terms of the importance of institutions. He asserts that transboundary river basins with relatively strong institutions can act as a unifier. He notes in, "Healing the Enlightenment Rift: Rationality, Spirituality and Shared Waters", that, water management by definition is conflict management. He further states that while press reports on international waters often focus on conflict, there are encouraging stories throughout the world on how water also induces cooperation even in hostile basins. Wolf is of the view that unlike other scarce resources, water is used to fuel all facets of society. He explains that countries that share a water basin cooperate on water issues, even when they do not cooperate over other issues. He investigates the potential of integrating a spiritual understanding of water conflict transformation with current prevailing economic, environmental and strategic constructs as water acts as both an irritant and a unifier. As an irritant water can make good relations bad and bad relations worse. Despite the complexities however, transboundary river basins with relatively strong institutions can act as a unifier, a view appreciated in this research.[37] This study posits that, if rules are put in place and strictly adhered to, the management of the effects of the Bagre Dam spillage could be a source of cooperation between Ghana and Burkina Faso, rather than a conflict.

According to Opoku et al,[38] the hydro-political assessment of water governance in the Volta Basin is intended to guide and inform the development of a generic methodological model for building local indigenous institutional principles into international transboundary river basin institutional arrangements. The authors discuss the historical development of water governance

of the Volta River Basin, paying attention to the economic, political and social dynamics of water management with the legal and institutional framework in the Ghana and Burkina Faso portion of the Volta Basin.[39]

For much of the part of one hundred and fifty years, a potentially important vehicle for water management has been traditional institutional arrangements. The arrangements have experienced profound changes in the Volta Basin, in Ghana and Burkina Faso. Opoku et al analyse recent developments in transboundary, national and basin water management such as institutional arrangements and framework for water governance within the Ghana and Burkina Faso portion of the Volta Basin. This institutional arrangements and framework included the establishment in 1995, of the General Directorate of Hydrauliques (DGH) in Burkina Faso to take charge of all water related activities, and the creation of the Water Resources Commission (WRC) in 1996 in Ghana, as the body responsible for managing the nations water resources.[40] They did not however identify that the construction of a dam upstream Burkina Faso and its attendant consequences on the population of downstream Ghana is a likely source of tension between the two countries.

1.8.2 Sources of Conflict and Cooperation in Transboundary Water Management

Owusu, Waylen and Youliang[41] analyses the reduced water level at the Volta Lake. They are of the view that, increased variability and declining rainfall totals are the main cause of declining lake levels in the Volta basin above the Akosombo Dam in Ghana. The trends in the spatial and temporal variability of annual rainfall in the riparian nations explain the low impoundment levels frequent in recent decades. The drying up of Burkina Faso and Mali is particularly marked and synchronous to an apparent shift in the rainfall regime in Ghana towards a longer dry season and vanishing short dry spell, the effects which tend to negate each other. Ghana

constructed two hydroelectricity generating plants on the Volta River at Akosombo and Akuse between 1961 and 1965, and 1972 and 1982 respectively. Since the 1970s, West Africa has undergone a period of declining rainfall, punctuated by a series of severe droughts and marked by a shift in rainfall regime.[42]

As a result lake levels have fluctuated so widely that, at times, power has had to be rationed in Ghana. The most extensive shortages occurred in Ghana during 1983, 1998, and 2007 and currently since 2012. Consequently, Ghana has neither been able to meet industrial demand nor fulfill its international commitments to supply power. Accusations of water withdrawals upstream beyond Ghana's borders causing reductions of flow in the lower basin have however, increased regional tensions and the potential for conflict. However, despite the political rhetoric, studies have shown that water withdrawals upstream in Burkina Faso have very little impact on reservoir levels downstream in Ghana. Rainfall variability and the incidence of meteorological drought have been identified as the main causes of reduction in levels and their subsequent impact on power generation. Owusu, Waylen and Youliang, analyze the trends in the spatial and temporal variability of rainfall in the six riparian nations above the Akosombo Dam to explain the low impoundment levels that have become frequent in recent decades. They conclude that the decline is widespread and that there has been a shift in the rainfall regime in association with the reduction. It is hoped that a better understanding of the causes of variability will help reduce the potential of conflict in the basin and help in fostering agreement of water resource sharing which at present is non-existent in any meaningful way.[43]

However, Owusu, Waylen and Youliang appeared not to have recognized the building of the Bagre Dam as a potential source of tension between Ghana and Burkina Faso. This implies that there was no proper risk assessment of the effects of the Dam's operation especially the sudden

release of water which inundates the banks of the White Volta with damaging effects on people and property.

In his article, "the Volta Convention: An Effective Tool for Transboundary Water Resource Management in an Era of Impending Climate Change and Devastating Natural Disasters,"[44] Matthews, looks at the physical description of the Volta Basin, including the tributaries of the watercourse and their relation to the riparian states of the basin. He examined the historical uses of the Volta basin's water, beginning with the pre-colonial and modern uses. His article further discusses the various social, economic, and other pertinent issues caused by water issues that affect the riparian states, particularly those related to climate change, resulting in conflict between the states. It also analyses the development of the international legal regime relating to the watercourse subsequently, the article then looks at the Volta Convention signed in 2007 and ratified by riparian states, analyzing its strengths and short comings in comparison with the United Nations convention on the law of non-navigable uses of international watercourse. Matthews notes that the Volta Convention current obligations are insufficient to combat the impending natural disasters associated with global climate change.[45] Mathews therefore concludes that the Convention has the opportunity to be an effective tool for transboundary water resource management to protect the basin's state populations and sovereign interest from the impending dangers of climate change only if changes are made to the treaty.[46] Matthews, however, did not consider the Bagre Dam and its annual spillage as a potential source of cooperation or conflict between Ghana and Burkina Faso, due to the annual inundation it causes in Ghana.

Owusu,[47] states that water is life. It is indispensable for existence, sustenance, and survival as humans and consequently, access to, and use of water for a variety of purposes such as drinking

and agriculture are critically important. Shared by different people and different nations with common water sources or river basins, issues of conflict or cooperation necessarily arise, especially when access is constrained or scarcity increases, situation that inevitably generate tension. Owusu looks at the area of current and potential cooperation and conflict among the six riparian countries of the Volta River in West Africa. He asserts that given the importance of the use and management of the Volta river water among the two riparian countries of Burkina Faso and Ghana located upstream and downstream of the river respectively, and which together constitute about 85% of the Volta Basin, it is important to examine the basis and history of conflict and cooperation between the two countries.[48]

This is especially so since they share some common interests such as water demand for domestic, irrigation and other agricultural usage as well as conflicting interest, such as disparities and priorities in rural vis-à-vis urban industrial usage of water. With no cooperation, the potential for conflicts among the riparian countries tends to increase with rising water withdrawals. Owusu, also looks at a number of conventions and statutes signed among the riparian countries of the Volta Basin, their level of implementation and those that has not been transformed to action.[49]

Owusu, identifies floods in Northern Ghana, contributed to by the opening of the Bagre Dam as one of the sources of tension between Ghana and Burkina Faso, a view the present research intends to investigate. He however did not make this fact the center of his work. He especially ignored how the effects of these perennial floods on the Ghanaian population could impact on the relations between Ghana and Burkina Faso. Though his article examines the basis of conflict between Ghana and Burkina Faso on the use and management of the Volta River, its concentration is on the tension that arises as a result of staving the Akosombo Dam of water by

the construction of the Bagre Dam, as well as competing use of water of the river for hydro and irrigation purposes in Ghana and Burkina Faso, as demand for water from the Volta River continues to rise among the riparian countries.[50]

Van de Giesen et al,[51] give an overview of present issues concerning water resources of the Volta Basin, quantifies availability and the relatively poor reliability of water resources, the increasing demand for irrigation that stands in conflict with the also increasing demand for hydropower. Van de Giesen et al presents a recent initiative to develop a system that will help decision makers in the West Africa sub-region design policies that make optimal use of available water and avoid inter-sectorial conflict. They also note that although average rain in the Volta Basin is ample, the spatial and temporal variability make it an unreliable resource for agricultural purposes. Without reliable water supply, investment in agriculture are risky or not profitable. The surface water resource needed for navigation development show a high sensitivity with respect to rainfall and probably land surface characteristics. Burkina Faso and Northern Ghana stand in competition for water resources with the urbanized society of southern Ghana.[52] Van de Giesen et al look more at competition for water resources in the Volta Basin for various uses. Their article did not touch on the construction of the Bagre Dam in Burkina Faso, and the likely effects it can have on Ghana and Burkina Faso relations, which is the focus of this research.

In line with the views of Van de Giesen and his colleagues, Uitto and Duda,[53] opined that tensions over freshwater resources may become more frequent as pressures on water resources grow due to increased demand and variability of rainfall. Conflicts may take place between or within countries or between competing sectoral users. They advocate institutional approaches for enhancing cooperation between countries for sustainable development of transboundary

freshwater bodies and contributing basins. Uitto and Duda note that instead of being zones of conflict, shared water resources can provide a basis for cooperation and benefit–sharing provided that threats to the international waters are recognized and collaborative structures are created. The development of a science–based diagnostic analysis is essential to identify the threats to the transboundary ecosystem and to break down the issues into manageable parts with the aim of developing a strategic action programme. Ensuring political commitment that can result in institutional, policy and legal reforms in the countries concerned is the key to sustainable development of the transboundary resource.[54]

This research shares the view of Uitto and Duda, that political commitment to policies and established rules regarding the operations of the Bagre Dam could help extinguish the likelihood of conflict between Ghana and Burkina Faso.[55] The authors, however, did not specifically note that the position of Ghana and Burkina Faso as downstream and upstream respectively poses greater potential of conflict between the two countries, especially with the construction of the Bagre Dam on the White Volta and the annual floods its spillage causes in Northern Ghana.

Wolf[56] is again of the view that, 'water' and 'war' are two topics being assessed together with increasing frequency. No war has ever been fought over water. In contrast, several water-related treaties have been signed. He investigates the reality of historic water conflict and draws lessons for the plausibility of future water wars. According to wolf, war over water is neither strategically rational, hydrographically effective, nor economically viable. Shared interests along a waterway seems to consistently outweigh water's conflict inducing characteristics. He notes that once cooperative regimes are established through treaty, they turn out to be impressively resilient over time, even between otherwise hostile riparian and even as conflict

is waged over other issues. Wolf, catalogues a number of transboundary water disputes resolution in history, in contrast to that of conflict. Wolf, is general and never specifically treated the Volta River Basin in West Africa, let alone narrowing down to issues arising between Ghana and Burkina Faso as a result of the construction of the Bagre Dam. It is, however, plausible that based on his analysis, conflict can arise between these two major riparian countries of the Volta River over the effects of upstream water release on downstream population, just as respect for agreements can lead to cooperation between them.[57]

1.8.3 Ghana-Burkina Faso Relations

On relations between countries in the international arena, Scott Thompson[58] stresses the importance of cooperation and interdependence of close neighbours. He opined that "Canada is more important to the United States than any other single country." It will not therefore be an over statement to say that Ghana's own neighbours such as Burkina Faso, Togo and Ivory Coast are of primary importance in its foreign relations. This is particularly true in this era of increasing interdependence of states on one another since states cannot leave in isolation given their limited resource as well as the fact that some resource are shared with other countries. This has called for greater cooperation and collaboration, since what happens in a given state might have a replicating effect in neighbouring states. Thompson further notes that, it is important that Ghana's relations with Togo and Ivory Coast be considered as careful as its relations with states which might be greater and richer but distant.[59]

Thompson, in his writing stresses the importance of Ghana's relations with her neighbours. He probably did not consider the Volta River, most of the tributaries of which originates from upstream Burkina Faso, and which is important in the economic development of Ghana and thus, a major component in Ghana-Burkina Faso relations.

1.9 Sources of Data Collection

The study relies on primary and secondary sources. The primary data is derived from personal and telephone interviews which includes officials from the Ghanaian and Burkinabe Ministries of Foreign Affairs, the Ministry of Interior of Ghana, staff of the Ghana Embassy in Burkina Faso and the Burkinabe Embassy in Ghana, officials from the Volta River Authority (VRA), and the Société Nationale Burkinabe d'Electricité, (SONABEL) in Burkina Faso. Staff of the National Disaster Management Organization, (NADMO) as well as chiefs and opinion leaders of the Communities of Talensi, Bawku West and Binduri Districts and the Bawku East Municipality of the Upper East Region were also interviewed. These communities are usually the most affected when the Bagre Dam spillway gates are opened. Focus groups discussions were also carried out.

Secondary data was obtained from existing literature from published books, journal articles, newspapers and from internet sources.

1.10 Methodology

A qualitative data collection and analysis approach was used in this study. The qualitative approach offers a systematic subjective way of describing and giving meaning to life experiences and contextual situations.[60] The qualitative design of the study is the use of case study. According to Zucker (2009), a case study is "a systematic inquiry into an event or a set of related events which aims to describe and explain the phenomenon of interest."[61] It is a form of qualitative descriptive research that allows for an intensive study of individuals and situation concerned. This is relevant to the study as it provides room for the researcher to seek the right answers to the research questions.

Interviews were conducted primarily by personal contact and by telephone. The personal face-to-face contact allowed the researcher to study and consider the facial expression and body language of the respondents which helped in the interpretation of the responses. The telephone interviews also afforded the researcher the opportunity to obtain responses from key stakeholders who it proved impossible to meet face-to face

Respondents were selected using the purposive sampling technique. Purposive sampling is when a researcher chooses specific people within the population to use for a particular study or research project on the basis of one's own knowledge of the population.[62] This technique allows the interview of key stakeholders useful to this study so identified. The sample size for the interviews is twenty (20) persons drawn across the four (4) main Districts the research covers. Three focus group discussions with groups composed of men and women and drawn from various communities in the Bawku East, Bawku West and Binduri District were held. The focus groups composed of ten (10) persons each. The researcher's ability to speak French, English and the local languages of the research communities helped to facilitate the interviews and focus group discussions with the relevant stakeholders.

Once the interviews and focus group discussions were conducted, data analysis was done by transcribing the collected data and then closely studying the views to come out with the results.

1.11 Arrangement of Chapters

This dissertation is organized into four chapters.

Chapter one constitutes the Research Design.

Chapter two looks at a History of Ghana and Burkina Faso Relations from 1957 to 2016.

Chapter three assesses the effects of the annual water spillage from the Bagre Dam, on the affected communities along the White Volta, and its likely impact on Ghana and Burkina Faso relations.

Chapter four concludes the study with Summary of Findings, Conclusion and Recommendations.

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CHAPTER TWO

BRIEF OVERVIEW OF GHANA-BURKINA FASO RELATIONS FROM 1957 TO 2016

2.0 Introduction

Ghana and Burkina Faso have had a long standing relationship from pre-colonial period, through to independence to date. Both countries depend on the Volta River Basin to some extent for their economic development. The relation between the two countries has since independence been influenced by several factors, and the construction of the Bagre Dam in 1992 on the White Volta sub-basin of the Volta River Basin cannot be left out.

This chapter provides a brief overview of Ghana-Burkina Faso relations from 1957 to 2016. It will also briefly describe the geography of the Volta River Basin, which is shared by some six riparian countries in West Africa, including Ghana and Burkina Faso, and on which the Bagre Dam, which is in the centre of this research is built. An overview of the general relations under the various governments of the two countries gives an insight into the impact of the Bagre Dam on their relations.

2.1 Brief Political History of Ghana

Ghana, formerly known as the Gold Coast was the first African country south of the Sahara to gain independence from Britain, on March 6, 1957 under the leadership of Dr. Kwame Nkrumah and later became a republic on July 1, 1960. Upon gaining independence the name Gold Coast (Land of Gold) was changed to Ghana (warrior king) named after the great Ghana Empire.[1]

The country is divided into ten (10) administrative regions with 276 Metropolitan, Municipal and District Assemblies and with Accra as its capital city. Since independence, Ghana has witnessed several political regimes, both civilian and military. It has also gone through four republics. The 4th republic began with the 1992 constitution, and has led to successful change of governments between civilian regimes.

2.2 Geographical Structure of Ghana

Ghana is a coastal country in West Africa that is bordered to the North by Burkina Faso, to the West by Cote d'Ivoire, to the East by Togo and to the South by the Gulf of Guinea and Atlantic Ocean. It covers a geographical area of 238,533 Sq. km. Ghana is located only a few degrees north of the Equator. The Greenwich meridian also passes through Ghana, making the country geographically closer to the centre of the world than any other country.[2]

The topography is predominantly undulating and of low relief with slopes of less than 1 percent. Despite the gentle slopes, about 70 percent of the country is subject to moderate to severe sheet and gully erosion. The highest elevation in Ghana, Mount Afadjato in the Akwapim-Togo Ranges, rises 880 metres above sea level. There are five distinct geographical regions:

- The low plains, stretching across the southern part of the country.
- The Ashanti Uplands, stretching from the Côte d'Ivoire border in the west to the elevated edge of the Volta Basin in the east.[3]
- The Akwapim-Togo Ranges in the eastern part of the country consist of a generally rugged complex of folded strata, with many prominent heights composed of volcanic rock. The ranges begin west of Accra and continue in a northeastern direction, finally

crossing the border into Togo.

- The Volta Basin occupies the central part of Ghana and covers about 45 percent of the country's total area. The basin is characterized by poor soil, generally of Voltaian sandstone. Three quarters of the country is drained by the Volta River, which enters the country from the Northern Regions and flows to the sea. The main channel of the Volta River flows more than 1400 km before reaching the Gulf of Guinea near the town of Ada.
- The high plains in the northern and northwestern part of Ghana, outside the Volta Basin, consist of a dissected plateau.

Soils in the high plains are more arable than those in the Volta Basin. Ghana has a warm, humid climate. Mean annual rainfall of the country is estimated at 1,187 mm. Mean annual temperatures range from 26.1°C near the coast to 28.9°C in the extreme north. Annual potential open water evaporation has been estimated as ranging between 1,350 mm in the south to about 2,000 mm in the north. The actual amount of evaporation depends on a number of factors including water availability, vegetation cover and prevailing weather conditions among others. There are six agro-ecological zones defined on the basis of climate, reflected by the natural vegetation and influenced by the soils. Rainfall distribution is bimodal in the forest, transitional and coastal zones, giving rise to a major and a minor growing seasons in those areas. In the remaining two agro-ecological zones of the country, the unimodal rainfall distribution gives rise to only one growing season. Only in some parts of the country is the climate favorable for non-irrigated agriculture. Rainfall exceeds potential evaporation during relatively short periods. Even in the southern forest zone where rainfall is at its highest, irrigation is essential for short season crops during the dry period.[4]

Ghana has a high relief along its eastern edge, east of River Oti and the Akwapim-Togo ranges which have their ending near Accra. The Black, White and Red Volta which constitutes the Volta Basin and originates from Burkina Faso join in central Ghana to become one river. The adjoining valleys are largely the artificial Volta Lake. The country also has a varied climate with its south western part experiencing a tropical climate which changes sharply into a Sahelian climate near the extreme north. The southern regions are generally humid and experiences a two-season cycle. The north experiences one rainy season from about March to September. The rest of the year is the dry season characterized by harmattan which blows from the Sahara desert.[5]

2.3 Brief Political History of Burkina Faso

Burkina Faso, formerly called Upper Volta (French: Haute Volta) was one of the overseas territories of France in West Africa following the scramble for and partition of the African continent among various European countries in 1885, and remained a French colony until August 5, 1960 when it gained its independence from the French, with Maurice Yaméogo as leader. The country was renamed Burkina Faso, which means "Land of Incorruptible People," on August 4, 1984 by the Thomas Sankara government. Residents of Burkina Faso are known as Burkinabe. The country is divided into thirteen (13) administrative regions and forty-five (45) provinces, with Ouagadougou as its administrative capital. Ouagadougou, is also in the centre of the country and lies about 500 miles (800 km) from the Atlantic Ocean. Burkina Faso, after attainment of independence has been ruled primarily by military regimes and has experienced a record six successful military overthrow of governments in the 1970s and 1980s.[6] A new constitution was promulgated in 1991, and the country's first multiparty presidential elections were held soon after.

Blaise Campaore remains the longest served president, ruling the country from 1987, after the overthrow of the Sankara government, until 2014 when he was overthrown in a popular civilian uprising against his government.

2.4 Geographical Structure of Burkina Faso

Burkina Faso is located in the middle of West Africa's hump. It is geographically in the Sahel zone, the transition zone between the Sahara Desert in the north and the tropical savanna in the south. Burkina Faso is a landlocked West African country bounded to the North and West by Mali, to the South by Benin, Ghana and La Cote D'Ivoire and to the East by Niger. The country has a total area of 274,200sq km with Ouagadougou as the largest city. Burkina Faso is located on a plateau and most of the country is between 300 and 400 metres above sea level.[7]

The country is drained in the East by small rivers that eventually flow into Niger. Most important rivers as the Mouhoum (Black Volta), the Nakambe (White Volta) and the Nazinon (Red Volta) drains to the South and confluence in Ghana as the Volta River. Burkina Faso has tropical climate with two distinct seasons, the rainy season and the dry season.[8]

Burkina Faso is situated on an extensive plateau, which is slightly inclined toward the South. The lateritic (red, leached, iron-bearing) layer of rock that covers the underlying crystalline rocks is deeply incised by the country's three principal rivers; the Black Volta (Mouhoum), the Red Volta (Nazinon), and the White Volta (Nakambe), all of which converge in Ghana to the South to form the Volta River. The Oti, another tributary of the Volta, rises in Southeastern Burkina Faso. Great seasonal variation occurs in the flow of the rivers, and some rivers become dry beds during the dry

season. In the southwest there are sandstone plateaus bordered by the Banfora Escarpment, which is about 500 feet (150 metres) high and faces southeast. Much of the soil in the country is infertile.[9]

The climate of Burkina Faso is generally sunny, hot, and dry. Two principal climate zones can be distinguished. The Sahelian zone in the north is semiarid steppe, characterized by three to five months of rainfall, which is often erratic. To the south, in the Sudanic zone, the climate becomes increasingly of the tropical wet-dry type, with a greater variability of temperature and rainfall and greater total rainfall than the north.

Four seasons may be distinguished in Burkina Faso: a dry and cool season from mid-November to mid-February, with temperatures dropping to about 60°F (16°C) at night; a hot season from mid-February to June, when maximum temperatures rise into the 100s °F (about 40°C) in the shade and the harmattan, a hot, dry, dust-laden wind blowing off the Sahara desert, is prevalent; a rainy season, which lasts from June to September; and an intermediate season, which lasts from September until mid-November. Annual rainfall varies from about 40 inches (1,000 mm) in the south to less than 10 inches (250 mm) in the north.[10]

2.5 The Volta River Basin

The Volta River Basin is located in West Africa and occupies about 400,000km2. It is shared between six riparian nations: Burkina Faso (43%); Ghana (40%); Togo (6%); Benin (4%); Mali (4%) and Cote d'Ivoire (3%). The Basin stretches from approximately latitudes 5° 30"N and 14° 30"N and longitudes 2° 00"E and 5° 30"W in Mali. Ghana occupies the lower half of the basin and the point at which the three principle tributaries (the Black Volta, the White Volta and the Oti River)

join the main Volta at the Volta Lake behind the Akosombo Dam. The basin extends over at least four climatic regions, from Rainforest in the south to the Sahel in the north, with Guinea and Sudan Savanna in between (Rodgers et al. 2007). Each climatic zone is strongly influenced by the movement of the Inter-Tropical Convergence Zone (ITCZ), which is responsible for both rainfall regimes (Sultan et al. 2004; Rodgers et al. 2007).

Southern zones exhibit one peak in June/July and another in September/October, within an overall moist season stretching from April to mid-November. In the uni-modal north, the rainy season persists from May to October with a peak in August/September. The basin experiences high degrees of spatial and temporal variability in rainfall, making it unreliable for agricultural production resulting in diminishing food security. Irrigation is limited to the more arid Northern Regions especially in Burkina Faso. In Ghana the water is utilized mainly for power generation and domestic consumption. Three quarters of Ghana is drained by the Volta River, which enters the country's Northern Regions from Burkina Faso, and flows more than 1400 km before reaching the Gulf of Guinea near the town of Ada in the Volta Region. In addition to three quarters of Ghana, it also drains approximately two thirds of Burkina Faso, a large part of Togo and small slices of Côte d'Ivoire, Benin, and Mali. The basin can be subdivided into smaller basins belonging to its three major tributaries, the Black Volta, the White Volta, the Oti, and the Lower Volta, referring to the river downstream of the confluence of the Black and White Volta. The Black Volta flows from Burkina Faso, along the border of Ghana and Côte d'Ivoire, through the Bui Gorge into the Voltaian Basin. To the east, the White Volta also flows south from Burkina Faso. When it encounters the Gambaga escarpment it turns in a westerly direction traversing the foot of the escarpment until it reaches the end where it continues southward into the Voltaian basin. Further east, the Oti River

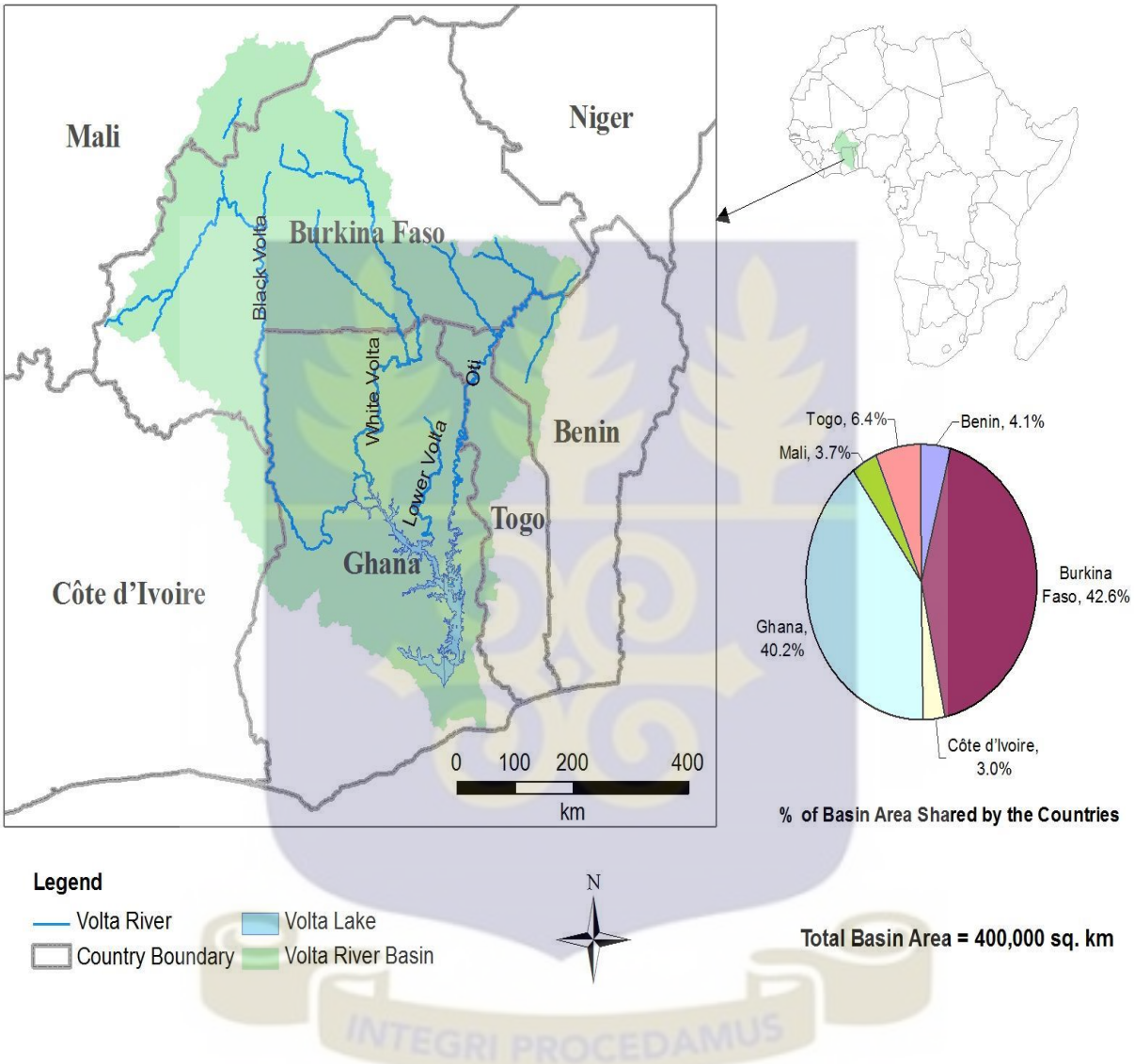
flows below the western slopes of the Buem Ranges before joining the Volta. The river flows through the Voltaian sandstone basin occupying an area of 112,768 km² in the heart of the north-central region of Ghana. In this basin are Paleozoic formations of sandstone, shale and mudstone and pebbly conglomerate beds. These materials are easily eroded and gently dipping or flat bedded. The basin is bounded on the south by the Southern Voltaian Plateau and in the northeast by the Gambaga escarpment. The river exits the basin through a narrow gorge at Akosombo, offering the opportunity to dam the river with a relatively small structure.[11]

Transboundary water resource management has been nonexistent within the basin until recently. In 2007, the Volta Basin states signed and subsequently ratified a convention, the purpose of which is to promote social and economic growth within the region and to effectively manage the Volta River and its tributaries. This instrument was the first and most important step in creating a cooperative effort for the basin's water resource management. Unfortunately, the treaty is severely lacking in many of its substantive and procedural obligations.[12] A series of memoranda of understanding has existed between countries through the initiative of the World Bank. The most profound is the one which requires that a country "proposing to execute any project which will regulate, abstract or otherwise change river flow must notify co-riparian states of its intentions so that each state may consider whether it wishes to lodge an objection" (World Bank 1995).[13] In the building of the Ziga Dam, Burkina Faso actually followed this protocol and invited a Ghanaian delegation to sign a non-binding agreement in order to satisfy the World Bank. Intense negotiations have failed to yield a firm agreement; a failure which reemerges when reservoir levels sink so low that energy crises and power rationing arise as they did in 1983, 1998, and 2007. For instance, in 1998, exacerbated by drought in the basin, Ghana accused Burkina Faso of causing low water

levels by increased withdrawals and obstruction of flow. Andreini et al. (2000) showed that withdrawals in Burkina Faso have very little impact on lake levels in Ghana. At the same time, Burkina Faso has opted to produce its own power because it considers Ghana's power production capacity as highly uncertain.[14]

The basin region has recently been plagued with devastating parasitic diseases, floods, droughts, and water shortages. As the global temperature begins to shift, the rainy seasons in the basin have become more sporadic and intense, leading to both flooding and droughts. Recent deluges have spurred conflicts between states, springing from accusations of dam letting without prior notification. The inundations left thousands homeless and destroyed thousands of hectares of farmland. These extreme weather events are projected to increase in occurrence and severity in the basin due to climate change, which would result in increased tension between riparian states,[15] especially upstream Burkina Faso and downstream Ghana.

Fig1: Volta River Basin. [16]



2.6 Environmental Impact: Flooding[17]

Flooding is one major environmental problem observed in the Volta River Basin which occurs as a result of changes in water quantity and seasonality of flows. Extremely high rainfall rates and the creation of uncoordinated dams without appropriate management practices are normally blamed for the flooding, which is exacerbated by the problem of land-use conversions. Soils with

significantly reduced vegetation cover that are exposed to atmospheric elements have little infiltration capacities to reduce storm water run-off. Another emerging problem is that some river channels are illegally diverted for the purpose of mining at the old river bed. The newly created river channel is most of the time shallow because of the topography. Therefore, slightly increased storm water causes serious floods because of the limited carrying capacity of the new river channel. These floods does not only affect the environment of the basin, but also cause significant loss of human life.

Changing seasons can also affect floods. A longer dry season, followed by more intense rainfall, leads to a higher likelihood of floods. This is the case mainly for the Oti, the Pendjari, the White and the Black Volta.

Flooding has a transboundary cause in the basin as it results from extreme rainfall events and uncontrolled dam releases from the upper part of the basin, e.g., from Burkina Faso to Ghana on the White Volta, from Burkina Faso to Togo from the Kompienga Dam, and also from Burkina Faso to Mali on the Sourou River as the backwater effect from the management of the Léry dam. Flooding also causes transboundary migration of people escaping rising waters.

The large number of intermittent rivers in the basin makes the practice of cultivating riverbeds possible. This is dangerous, however, as floods can come quickly from upstream. Lives and harvests have been lost as result of these practices. The surface water causes the scouring of the lands already weakened by harmful cultivation methods (bushfire, misuse of manure, etc.) and collects in areas to form great marshy zones.

2.7 The Bagre Dam

The Bagre Dam is a multipurpose dam built on the White Volta and located near Bagre Town in Burkina Faso on the coordinates: 11°28′36.78″N 0°32′48.10″W. The Dam was constructed from 1989 and completed in 1992 at a cost of 67 million CFA from the World Bank. It has a total capacity of seven billion cubic meters of water (7,000,000m3) or 5,700,000 acre: ft., with maximum length of 400km (250mi). It is the biggest dam in Burkina Faso with 40 meters deep, 400km long and 90km wide and has 40,000 to 80,000 hectors of arable land. Currently only 4,000 hectares is being utilized, and produces 450,000 tons of agricultural produce of cereals of various kind benefiting 3,325 families of farmers aimed at fighting food insecurity.[18]

The dam has two turbines with installed capacity of 16mw and operated by Société Nationale d'Electricité (SONABEL) of Burkina Faso. It provides 10 percent of the country's electricity needs. The dam impounds into the White Volta, and enters Ghana through the village of Sapielga in the Upper East Region, which is situated about 60km from the dam.[19]

2.8 Overview of Relations between Ghana and Burkina Faso

Ghana has had a long standing relationship with Burkina Faso, then Upper Volta, dating back to pre-independence. The dominant tribe of Central and Southern parts of Burkina Faso, the Mossi, are not much different from some of the tribes of the Northern parts of Ghana, such as the Mamprusi, the Dagombas and the Nanumbas. These identified tribes have close family ties, as they come from the same ancestor, Naa Gbewaa and are members of the Mole Dagomba ethnic group in northern Ghana. These tribes have similarities in culture, language and religion. It is also worthy of note that a lot of the people leaving along the Northern and Southern borders of Ghana

and Burkina Faso have family members across the other side. This family ties across the Ghana-Burkina Faso border consolidated the bond of oneness and friendship between Ghana and Burkina Faso as the people view themselves as one.[20] Owusu Maxwell,[21] posits that ethnic ties between the people divided by artificial borders inherited from colonial rule, grew stronger as easy border crossings and free exchange of goods and services contributed to marked improvements in the material and the social welfare of peoples on both sides of the border. The most important ethnics groups along the White Volta, and who live on both sides of the banks in Ghana and Burkina Faso are; largely the Mossi, the Gurmanche, Bissa, Gurunsi, Yana and Kurumba.[22] This ethnic groups largely share culture and religion.

Formal relations between Ghana and Burkina Faso however, began after the two countries gained their independence in 1957 and 1960 respectively. In late 1960, the first president of Ghana, Kwame Nkrumah, called for a single constitution for Ghana and Burkina Faso.[23] Indications of cooperation between Ghana and Burkina Faso became manifest when President Maurice Yaméogo of Burkina Faso paid a state visit to Accra in May 1961. The visit was reciprocated a month later by President Kwame Nkrumah when he paid a five day official visit to Burkina Faso.

In June 1961, Presidents Kwame Nkrumah and Maurice Yaméogo of Ghana and Burkina Faso respectively signed the Paga Accord, establishing a custom union between Ghana and Burkina Faso and also established a Ghana - Burkina Faso Permanent Joint Commission for Cooperation (PJCC) to discuss possible areas of cooperation for the two countries. The two leaders knocked down a wall in the border town of Paga to demonstrate the coming together of the two countries.[24] In early July, the Ghana - Burkina Faso PJCC concluded its first session successfully. Ghana

immediately gave Burkina Faso a sum of £2,000,000 loan to support its budget for that year.[25] Presidents Nkrumah and Yaméogo cooperated in the construction of the Akosombo Dam on the Volta River which takes much of its source in upstream Burkina Faso. According to Bluwey, [26] there was an agreement between Ghana and Burkina Faso for the former to supply electricity power from the Akosombo Dam to the latter, all aimed at enhancing relations between the two countries to ensure consistent flow of water from upstream Burkina Faso into the Volta Lake in Ghana.

Ghana-Burkina Faso relations later turned cold due to an attempt on the life of Nkrumah. On 31st July 1961, Nkrumah visited Tenkodogo in Burkina Faso where he met with Yaméogo and they discussed the problem of the Paga Accord for a day and a half. On his return to Accra from Tenkodogo, Nkrumah passed through Kulungugu, a little Ghanaian border town with Burkina Faso, where he barely missed death from a grenade attack of an assassin. Investigations pointed to Burkina Faso and Togo's association to the plotters of the attempted assassination. To protect his security Nkrumah ordered the closure of all Ghana borders with her neighbours. The agreement with Burkina Faso, for all intent and purpose, was thus rendered impotent.[27] Relations between the two neighbours remained cold until the overthrow of both Presidents Nkrumah and Yaméogo in 1966.

Ghana-Burkina Faso relations after the overthrow of both Nkrumah and Yaméogo alternated between cordial and hostile. Under the leadership of Lt General Joseph Arthur Ankrah of the National Liberation Council (NLC) in Ghana and General Sangoule Lamizana of Burkina Faso respectively the relations between Ghana and Burkina Faso improved. Their background as

military leaders probably explained the friendly relations that characterized the period. The NLC regime reopened the border that was closed to Burkina Faso by the Nkrumah government. As a good gesture of friendship, the NLC government also reviewed the repayment terms of the £2,000,000 loan given to Burkina Faso under President Nkrumah. The repayment which was scheduled for fifteen (15) years was extended to twenty (20) years. The NLC government and Burkina Faso also established a joint committee in 1968 to properly demarcate the border areas between the two countries. The two leaders also engaged in several bilateral visits at the highest level.[28] For example, on 27th January, 1968, General Ankrah of Ghana made a state visit to Ouagadougou. This gesture was reciprocated by General Lamizana with a visit to Ghana in August the same year.[29]

In 1969, the NLC handed over to a civilian government led by the Progress Party (PP) under the leadership of Dr. Kofi Abrefa Busia. Under the PP government, Ghana's relations with Burkina Faso strained with the introduction of the Aliens Compliance Order (ACO) in 1969, a government order that compelled all aliens to regularise their stay in Ghana or be expelled. Burkina Faso had a large population in Ghana in the mining sector and plantations, who were affected. Despite this situation, the PP government tried to re-establish friendly relations with Burkina Faso by engaging in several high level visits to discuss issues of mutual interest. Consequently, they set up three commissions on: border issues, migration and abolishing visa requirements.[30]

The Busia government was overthrown in 1972. The successive governments of the National Redemption Council (NRC), the Supreme Military Council I (SMC I) and Supreme Military Council II (SMC II) took steps to improve Ghana's relations with its neighbours after the

unpopular ACO had strained a number of relations. To encourage trade with Burkina Faso, a Permanent Joint Commission for Cooperation was set up between the two countries. Border issues were also reviewed with the establishment of a Joint Border Demarcation Commission in 1972 to prevent border disputes. The relations between the two countries also improved when Ghana contributed Sixty Thousand Cedis (¢60,000) to Burkina Faso in 1973 when the latter suffered from severe drought which affected its people. They also signed a number of trade agreements. For instance, a timber sales depot was set up in Bolgatanga to serve the timber needs of Burkina Faso. Cattle and meat arrangement was facilitated by the establishment of the Cattle Development Board (CDB) for the bulk purchase and distribution of cattle and meat in Ghana.[31]

Relations between the two countries were improved with the assumption of office by Dr. Hilla Limann as President of Ghana in 1979. Dr. Limann re-opened Ghana's Embassy in Burkina Faso and reactivated the Permanent Joint Commission for Cooperation which had almost collapsed. He also restored the one year French language study programme for university of Ghana students at the National University of Ouagadougou.[32]

Ghana-Burkina Faso relations were given a boost in the early 1980s during the reign of Flt Lt. Jerry John Rawlings and Captain Thomas Sankara. The two leaders regarded their revolutions as complementary, and shared ideological affinity and revolutionary aspirations. Relations between the two countries became so close that there was talk of political integration of the two countries.[33]

Political and economic relations were promoted through Joint Commissions of Cooperation. Border Demarcation Committees were also set up to manage border concerns that were a potential

source of conflict. Frequent high level consultations on political, economic, cultural and social issues were organised to share good practices and build capacities. The integration process was enhanced by the agreement of the Fifth Ministerial Session of the Ghana-Burkina PJCC, in Ouagadougou in 1985, where a protocol was adopted regarding inter-university cooperation between the University of Ghana and Ouagadougou. At the sixth session of the PJCC in 1986 in Accra, the two countries agreed: on a compulsory study of English and French in the area of energy and transport, a joint legal body to harmonise the civil and criminal laws and legal education. Relations were extended to the use of the Volta River. The sixth session proposed to use the river as a means of transportation between the two countries. Arrangements were also made for Ghana to export hydro-electricity from the Akosombo Dam to Burkina Faso to ensure the latter does not undertake any activity to disturb the flow of water in the Volta River.[34]

Ghana's warm relations with Burkina Faso received a serious but temporary setback with the assassination of Burkinabe President, Thomas Sankara in October 1987. His successor, Blaise Campaore, was widely believed to have been responsible for the assassination. As a result, relations between Ghana and Burkina Faso became strained until the Provisional National Defence Council (PNDC) handed over power to the National Democratic Congress (NDC) in 1992. Rawlings and Campaore met briefly for the first time in early 1988 in Tamale, the capital city of Ghana's Northern Region, to discuss Ghana-Burkina relations. The meeting however ended in a deadlock, and did not change much, as relations between the two countries remained strained and was characterized by mutual suspicion.[35] Diplomatic relations got affected and Dr. Kelli Nordor, the Ghanaian ambassador to Burkina Faso was declared 'persona non grata' in July 1988, having been accused of interfering in the internal affairs of Burkina Faso. He left Ouagadougou and Ghana

never replaced him. Burkina Faso also recalled its ambassador to Ghana the same period without replacement.[36] The much tensed atmosphere from the beginning however improved, especially after 1992 when both countries embraced democracy.

Ghana-Burkina Faso relations under the National Democratic Congress (NDC) government led by President Jerry John Rawlings was not significantly different from their relations after the death of Captain Thomas Sankara, though some improvement occurred. Trade and migration continued between the people of the two countries. Ghanaian traders' imported vegetables such as tomatoes and cabbage and animals and animal products from Burkina Faso, while Burkinabes used the Tema and Takoradi ports of Ghana to import goods and transport to their country. They also continue to import timber from Ghana. A marked improvement was seen in the diplomatic arena. The Burkinabe government in its desire to raise the status of its embassy in Accra appointed Mr. Joro Somé as ambassador to Ghana. The NDC government reciprocated by appointing Major (rtd) R. A. Achaab as ambassador of Ghana to Burkina Faso in 1993.[37]

In 2001 there was a change in government bringing the 19 year PNDC/NDC rule to an end. The government of new patriotic party (NPP) under the leadership of President John Agyekum Kufuor came to power in January 2001. The new NPP government pursued the policy of good neighborliness, and took steps to improve relations with Burkina Faso. The NPP government emphasised economic diplomacy and improved trade relations with Burkina Faso. It facilitated the use of the Tema and Takoradi Harbours for Burkinabe business people by opening a country office of the Ghana Ports and Harbours Authority (GPHA) in Ouagadougou. It also instructed the Ghana embassy in Burkina Faso to always assist Ghanaian importers of tomatoes and other vegetables

and animals from Burkina Faso to Ghana.[38]

The relations also witnessed several high level visits to discuss issues of cooperation and development among the two countries. Among the visits include a three-day state visit paid by Burkinabe president, Blaise Campaore to Ghana from June 30 to July 2, 2002, on the invitation of his Ghanaian counterpart, President John Agyekum Kufuor. Presidents Campaore and Kufuor held bilateral talks on political, economic and cultural issues between Ghana and Burkina Faso.[39] The two countries also revived the Ghana-Burkina Faso JPCC which had become dormant. The PJCC then held its 9th session in Ouagadougou from 9th to 11th march 2006, and addressed outstanding issues in respect of border demarcation and cooperation between judicial institutions of the two countries.[40]

The improved relation between Ghana and Burkina Faso under the NPP government continued under the second NDC government with John Evans Atta Mills as president. President Mills paid an official visit to Burkina Faso from the 8th to 9th April 2009 to forge better ties with the nations in a spirit of brotherliness to bring better lives to their people.[41] Economic relations continue with free movement of goods and people between the two countries.

Ghana's relations with Burkina Faso has not changed under the NDC government led by President John Dramani Mahama. Trade relations across the common borders of the two countries continue to be viable. There has also been a number of high level exchange of visits between the two countries. For example, on 05/09/2012, President John Dramani Mahama paid an official visit to Burkina Faso, his first visit abroad as president, in a tour of the neighbouring countries, to thank

President Blaise Campaore for his support during the funeral of late President John Evans Atta mills, and to boost bilateral cooperation between Ghana and Burkina Faso.[42]

On 7th January 2013, Burkina Faso was represented by a delegation led by its prime minister, Luc-Adolphe Tiao, to the investiture of president elect of Ghana, President Mahama.[43] On December 13, 2012, Mr. Mark Woyongo, then Upper East Regional Minister led a delegation to Po, in Burkina Faso to represent President Mahama at the 55th independence celebration of Burkina Faso.[44]

In August 2012, Mr. Woyongo had earlier led a Ghanaian delegation to Tenkodogo in Burkina Faso for a three-day forum between Ghana and Burkina Faso on the use of shared resources of the Volta Basin between the two countries.[45] In November 2012, Mrs. Lucy Awuni, then deputy Upper East Regional Minister led a Ghanaian delegation to Kombisisri in Burkina Faso for a tripartite security meeting involving Ghana, Burkina Faso and Togo, to discuss ways of strengthening their ties and adopting methods of dealing with trans-border crime.[46]

After the overthrow of President Blaise Compaore in a popular uprising in 2014, in Burkina Faso, President Mahama played an instrumental role in restoring peace and stability in that country. Later, on 29th November, 2015, President Mahama led a delegation of Ghanaians to attend the investiture of Burkinabe President-elect, Roch Marc Christian Kabore in Ouagadougou.[47]

Under the Mahama led NDC, the Ghana-Burkina Permanent Joint Commission of Cooperation(PJCC) held it 11th session in Ouagadougou, Burkina Faso from 8 to 10 October, 2013,

during which a number of bilateral issues of cooperation where discussed including water resource management, military, justice, security issues, human rights, and border administration.

2.9 Economic/Trade Relations

In line with Ghana's foreign policy agenda focusing on economic diplomacy and good neighbourliness, Ghana's relations with Burkina Faso are geared towards harnessing the trade, investment and tourism capabilities of the two countries in order to accelerate socio-economic development for the mutual benefit of all.

In this regard, Ghana and Burkina Faso established a permanent joint commission for cooperation in trade, commerce, agriculture, investment, education, telecommunication, issues on environment as well as matters bordering on socio-economic development. There are also "sister-city" relations, which twin cities and towns in Burkina Faso to cities and towns in Ghana to concretise cooperation and promote people-centred integration to improve the welfare of the people.

Officials from both countries attend exhibitions, trade shows and conferences with the aim to exchange ideas for the development of both countries, especially in Africa tourism development. Furthermore, a number of Ghanaian companies have established subsidiaries in Burkina Faso, notably Latex Foam, Manufacturers of Fruit Juice, and Aluminium products.

Ghanaian traders import tomatoes and other vegetables as well as animals and animal products from Ghana for the Ghanaian market, while Ghana also provide timber and salt among other host of products for the Burkinabe market.[48]

2.10 Conclusion

In general, Ghana-Burkina Faso relations since independence have fluctuated with intermittent periods of cordiality, mutual suspicion, fear and hostility at times. The relations depended on several factors, prominent among them being leadership, trade necessities, security and the use of shared natural resources. The Volta River Basin is a major resource the two countries depend on, and as upstream and downstream countries of the river, sharing between them about 85% of the basin, their relations is determined by the level of cooperation in the management of the shared river basin.

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CHAPTER THREE

EFFECTS OF THE ANNUAL WATER SPILLAGE FROM THE BAGRE DAM ON THE AFFECTED COMMUNITIES AND LIKELY IMPACT ON GHANA AND BURKINA FASO RELATIONS

3.0 Introduction

This chapter assesses the effects of the annual water spillage from the Bagre Dam on the affected communities and the likely impact on Ghana-Burkina Faso relations. The analysis is drawn from secondary and primary data gathered through field interviews conducted by the researcher. Findings from the data analysis suggest that the effects suffered due to the spill is more often on a much lower scale than portrayed by the media. It appears that much of the sentiments and reactions from Ghanaians about the issue have been instigated by media exaggeration of the extent of destruction to property and loss of lives. Besides, some of the affected people living along the Volta River points to a more positive relationship between them and Burkina Faso than portrayed by the media.

There appears to be some concerted efforts from both governments to manage the situation to reach a lasting resolution to avoid severing their historical ties or damaging current peaceful coexistence. Despite the difficulties that both countries encounter with regards to this problem, the current understanding between the two countries, their continuous dialogue and cooperation suggest that the devastating impact of the spillage of the dam has not negatively affected relations between Ghana and Burkina Faso.

3.1 Effects of the Annual Water Spillage from the Bagre Dam on the Affected Communities

Media reports indicates that nearly 266,000 people in the Northern, Upper East and Upper West

regions of Ghana were affected, with 22 people reported dead. Over 11,000 homes were destroyed and more than 12,000 hectors of farm lands were destroyed in the Upper East.[1] The reports show that in various years, the opening of the flood gates of the Bagre Dam has always contributed to floods in Northern Ghana with attendant consequences, especially in the immediate communities around the White Volta River banks and its tributaries, including communities in the Talensi, Binduri, Bawku West Districts and the Bawku East Municipality with attendant effects on the people.

The secondary data reviewed indicates that in 1999, when Burkina Faso opened the Dam's spillways for the first time since the completion of its construction in 1992, the resulting flooding, combined with torrential rains in Northern Ghana, caused an outbreak of cholera in the area that left 9,000 people homeless.[2] 52 lives were reportedly lost in the Northern Regions of Ghana and an estimated 21 million dollars was required to rehabilitate flood victims in affected areas.[3]

The Integrated Regional Information Network (IRIN) reported that in September 2007 Ghana experienced one of the most widespread and devastating floods in recent times. Ghana's National Disaster Management Organization (NADMO) and its Ministry of Interior figures indicates that nearly 266,000 people in the Northern, Upper East and Upper West regions of Ghana were affected, with 22 people reported dead. Over 11,000 homes were destroyed and more than 12,000 hectors of farm lands were destroyed in the Upper East Region alone. The threat to human health through pollution of portable water sources such as boreholes, hand-dug wells as well as destruction of livestock has equally been significant.[4]

The media reports also show that in 2009, floods in the Northern Regions of Ghana following heavy rains was made worse by the opening of the Bagre Hydro Dam, which inundated several communities sited along the banks of the Volta Basin. At least 5,104 houses collapsed, 13 public schools and 30, 000 acres of farm land were destroyed. The floods also rendered 24 communities inaccessible. Mr. John Dramani Mahama, then Vice President of Ghana, visited some of the accessible communities and presented relief items to affected households.[5]

The floods in the Northern Regions of Ghana caused by the annual opening of the Bagre Dam in Burkina Faso and their disastrous consequences continued in 2010, 2011, 2012, 2013, 2014 and 2015. In 2015, more than 650 hectares of farmlands in the Bawku West District of the Upper East Region were reported to have been submerged as a result of the spillage from the Bagre Dam in Burkina Faso. About 1,200 farmers in the District had their farmlands and crops destroyed by the excess water from the spillage. Some farmers in the District contemplated commit suicide as a result of the damage. Some of the crops destroyed were maize and sorghum, in some communities in the district, including Zongoyire, Sakpare, Gozongo and Galaka.[6] This secondary source data was confirmed in an interview with Hon. Moses Aduk-Pam.[7] (See Appendix I-List of communities showing the flood effects in figures in 2015).

Fig 2: Floods in Bawku after spillage of the Bagre Dam in 2014.[8]

According to Kirston Hastrup and Cecillie Rubow,[9] the livelihood of the youth along the White Volta is strongly determined by the Bagre Dam. The floods affect their boat transport business as well as fishing in the river for a long time as community residence are warned to desist from going close to the river. This has led to food security problems and induced rural-urban migration, as the youth who lost their farms and other sources of livelihood departed from the communities to cities and neighbouring countries. This migration effects has the potential of impacting negatively on the general security and especially food security situation of the country.

During field interviews and focus group discussion carried out by the researcher in the Bawku West, Binduri and Talensi Districts and Bawku East Municipality of the Upper East Region, it was noted that floods on annual basis causes devastating consequences in the communities along the White Volta River and its Tributaries. (See Appendix II-Maps of usually affected communities in the various Districts) Some of the effects mentioned by interviewee ranged from political, economic, social, to cultural.

3.1.1 Economic Effects

Hon. Moses Auk-Apam[10] in an interview highlights that, the immediate impacts of the flooding include loss of human life, damage to property, destruction of crops, "loss of livestock, and deterioration of health conditions owing to waterborne diseases". Communication links and infrastructure such as schools, roads and bridges are usually temporary damaged and members of affected communities forced to leave their homes which are usually submerged to leave in safe havens, and normal life becomes disrupted as many becomes homeless.[11]

The disruption to the agricultural industry which is the main stay of the rural community, in particular, and Ghanaian economy, as a whole, leads to loss of livelihoods and affects the food security situation of the communities and the country by extension. Damage to infrastructure also causes long-term impacts, such as disruptions to access to clean water, electricity, transport, education and health care. Loss of livelihoods, reduction in purchasing power leaves communities economically vulnerable. Trade between the communities and their Burkinabe counterparts is normally affected by the floods as traders in the communities are unable to cross the river by canoes to trade. [12]

The floods have cost the Ghana government a lot of money in relief and emergency responses which comes at a heavy cost to the people and government and can impact on a country that is already struggling financially to make ends meet within the domestic economy thereby exacerbating economic hardships.[13]

According to Hon. Gambila,[14] there was reported widespread reduction in employment due to destructions of crops, farmland, livestock and roads. And because the rural economies are not diversified and are mainly dependent on agriculture, they are more sensitive to income effect, and therefore suffers from major loss of income due to the flooding, Loss of household income from agriculture results in increased poverty and misery.[15]

Despite the negative economic impact from the floods, a positive impact is also reported from the residents of the affected areas that the soil becomes more fertile for their crops after the floods.

Flooding deposits fine silt (alluvium) onto the floodplain, making it very fertile and excellent for agriculture. This attracts people to live on or near floodplains so that they can cultivate the land to help support their farming and therefore provide food. When the flood waters recede, enough water is left in their rivers which is used to sustain irrigated farming in the dry season, thereby raising the economic wellbeing of the residents. [16]

The negative effects of settling in those flood prone areas along the banks of the White Volta outweighs the gains. The farmers are attracted by the alluvial deposits of previous floods which make farmlands along the river banks fertile for crop production only to have their farms destroyed by the next flash flood.

3.1.2 Social and Cultural Effects

The social impact of the floods on the local communities should refer to 'all impacts on humans and on all the ways in which people and communities interact with their socio-cultural, economic and biophysical surroundings.'[17] The social impact has an ambivalent character. On one hand, it affects negatively, highlighting the trauma and emotional difficulties of the inhabitants, producing panic and chaos in the initial phase of the disaster, resulting in widespread disruption to family and community lives. Some of the people interviewed reported that they were traumatised. For them the loss of community members to floods has deep impact on their lives, and the ramifications is far greater on children who lost their love ones. The annual circle of thought of impending floods, and the need to prepare and to be continually cautious is much more traumatizing and devastating. According to Atubiga Asibi,[18] "displacement from one's home, loss of property and disruption to business and social affairs attributable to the Bagre Dam spillage are all causes of continuing

stress". She noted that the degree of isolation residents of the communities experience in the first few days of the floods, especially when they are cut away from other communities without clean water or food traumatises them.[19]

From the responses obtained during focus group discussion with members at Binduri, it appear that for some people, the psychological impacts can be long lasting. Discussants also revealed that the annual floods has led to mass migration of the youth to urban areas to seek alternative livelihoods which increases the stress on urban centres and resources and can weaken rural community cohesion which is a significant source of resilience in crisis as highlighted in the data collected. Migration to developed urban areas also contributes to the overcrowding in the cities. These migrants swell the ranks of the urban poor and end up living in squalor and overcrowded areas in cities.[20]

Mr. Atubiga Fortunate, [21] in an interviews, it was noticed however, that, "the annual floods also have positive impact on the social fabric, since people become more united to face the collective adversity". According to Mr. Atubiga and other respondents, the floods appeared to have increased community cohesion as they tried to help each other through the difficulties. Unity and collaboration within the daily life in the community becomes significant according to many respondents. The floods also leads to inter-community collaborations, even between Ghanaian and Burkinabe communities downstream the Bagre Dam, as they stay vigilant and share information on water inflow into the White Volta and the intensity of rains upstream.[22]

3.1.3 Political Impacts

Mr. Founeme Millogo, [23] in an interviews conducted by the researcher revealed that, the annual floods exacerbated by the spillage of the Bagre Dam has always created not only "tensions between Ghana and Burkina Faso, but opportunities for dialogue which engenders opportunities for Ghana and Burkina Faso to foster a much better cooperation and understanding in their international relationships". Lessons are also learnt which improves practice and guide future decision making and actions that navigates away from antagonising international relations.

Also, Ineffective response to relief operations during major flood events leads to public discontent or loss of trust in the authorities or the state and national governments. Lack of development in flood-prone communities causes social inequity posing threat to peace and stability in the region. The people interviewed felt abandoned by successive governments. The tensions played out in the Ghanaian media accusing the government of its lackadaisical response to the flood crisis while beating the war drums exhorting the government to take punitive actions against Burkina Faso after the floods, highlights the extent to which politics can be mired in disasters. The responses from the interviews conducted also highlights the dissatisfaction that the affected rural communities expressed about being abandoned by governments for far too long without any support once the flood periods are over.[24]

3.2 Effects of the Annual Water Spillage from the Bagre Dam on Ghana-Burkina Faso Relations

The factors that shape Ghana-Burkina Faso relations such as trade, political ideology, leadership and the Volta River, influence their level of cooperation or conflict. Lack of cooperation can

motivate unilateral decision which can lead to conflict. As far as the operation of the Bagre Dam on the White Volta is concerned, unilateral action on the part of Burkinabe authorities in line with their country's national interest without regards to the consequences in downstream Ghana, could be a 'defection' in the views of game theorists, and this can be a potential source of conflict between the two countries. On the contrary, a cooperative behaviour between the two countries, resulting in adequate agreed terms and information sharing could avert any potential conflict in Ghana-Burkina Faso relations.

3.2.1 The Bagre Dam spillage as a Potential source of Conflict in Ghana-Burkina Faso Relations

The spillage of the Bagre Dam has led to accusation and denial from authorities of both Ghana and Burkina Faso. This accusations and denials stem from individual nationals or from official source and has been largely noticeable in secondary data reviewed by the researcher. For example, Prof. Samuel Nii Odai,[25] Pro Vice Chancellor of the Kwame Nkrumah University of Science and Technology (KNUST) and a water resources engineer, accused Burkina Faso of violating Article 7[26] of the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, and causing harm to Ghana through the opening of the floodgates of the Bagre Dam without adequate information sharing or compensating affected people in Ghana. He called for a lot more collaboration between Ghana and Burkina Faso to avoid future conflict. Also, K. B. Asante,[27] a retired Ghanaian diplomat, after the impact of the 2007 spillage on Ghana, noted that, Ghana should have been well informed of the intention of Burkinabe authorities to open the spillways of the Dam. He advocated that Ghana needed to take punitive action against the behavior of Burkina Faso.

In response, the Société Nationale Burkinabe d'Electricité (SONABEL), through the Burkinabe Embassy in Ghana recalled an agreement in which it was to regularly inform the Volta River Authority (VRA) through the Ghana Embassy in Burkina Faso, two weeks before the opening of spill gates of the Bagre Dam, and claimed to have respected the agreement and could not be blamed for the damages downstream.[28]

Following the floods in 2015, the Ghanaian Chronicle carried an editorial on August 19, 2015 which suggest that ever since the Bagre Dam was constructed by the Burkinabe authorities on the Volta River, Ghana, which lies downstream has never known peace. Each time excess water in the dam is spilled, it floods into towns and villages in Upper East and Northern regions. In most of the cases, these floods result in the death of several Ghanaians, in addition to destruction of cash and food crops.[29] The paper bemoaned Burkina Faso's short notice to Ghana on anticipated opening of the Bagre Dam which resulted in the destruction of several farmlands along the White Volta Basin. More so, many communities in the Bawku West, Binduri and Talensi Districts became submerged by flood water because there was not enough time for NADMO to educate the people who have settled along the banks of the White Volta.[30] It condemned the action of Burkina Faso and urged the government of Ghana to consider invoking the appropriate riparian legal instruments and seek guidance from the international community including the United Nations for a peaceful and binding sustainable resolution that will hold Burkina Faso accountable for its damaging and unilateral actions.[31]

According to Gao, Yongxua and Margolies, Amy,[32] one of the most immediate issues in the Volta Basin that emerges frequently as a potential cause of tension between Ghana and Burkina Faso is

the flooding caused in downstream Ghana by the opening of the floodgates of the Bagre Dam in Burkina Faso. They noted that unilateral opening of the floodgates by officials of Burkina Faso, who then warn official of Ghana regarding dam activities is a major source of concern as the opening of the floodgates in Burkina Faso has severe effects in Ghana. They concluded that although this situation has not resulted in a conflict or destroyed relationship between the two countries, it remains a source of high level of tension between them.

From the preceding concerns, it appears that adequate information sharing and collaboration before spillage of the Bagre Dam could mitigate the effects of the floods that comes with the opening and thereby reduce, if not eliminate the potential of the dam being a source of conflict between the two countries.

3.2.2 The Bagre Dam Spillage as a Source of Promotion of Cooperation in Ghana-Burkina Faso

Contrary to the public outcry and accusation of the Burkinabe authorities mostly garnered from secondary data, primary data gathered from interviews of relevant stakeholders suggest that Ghanaian and Burkinabe authorities continue to find common grounds for cooperation between the two countries.

Henry J. Owusu, [33] notes that, water plays a critical role in the development of riparian countries in the Volta Basin and the demand, use and discharge of water among these countries constitute a potential source of conflict. However at the same time, the Volta Basin also provides an opportunity for cooperation among the countries. Such potential for conflict and opportunity for cooperation in the basin is exemplified by relations between Ghana and Burkina Faso.

Evidence of cooperation between Ghana and Burkina Faso in relation to the Bagre Dam involves the bid to reduce the frequency and volume of water spilled. In order to prevent the frequent spillage from the dam which has always compounded the flooding situation in the Upper East Region of Ghana, in 2008, the height of the dam was increased by 1.5metres and the banks also strengthened to enable it hold more water and to reduce the flooding from spillage which has adverse effects in Northern Ghana.[34] Mr. Alhassan Samari, then Upper East Regional Minister, led a Ghanaian delegation to a ceremony held in Bagre in the Central East Province of Burkina Faso to attend the inauguration of the renovated Bagre Dam. He extended the appreciation of the government and people of Ghana to their Burkinabe counterparts for the gesture.[35]

In an interview with Mr. Baletum Amonzem, [36] an official of the Ghanaian Ministry of Foreign Affairs and Regional Integration (MFA&RI), indicated that the Bagre Dam is seen as a little issue in officialdom, as a potential source of conflict between Ghana and Burkina Faso. He noted that "though Ghana protested in the early 1990s when Burkina Faso indicated its interest to build a dam on the White Volta, Burkina Faso went ahead to do so siting its own national interest as the reason". According to Mr. Amonzem, Ghana's initial complain was about the fact that it was concerned about the issue of water withdrawal upstream that could starve the Akosombo Dam of vital resource for hydropower production. Little was known about the fact that in later years the operations of the dam could lead to devastating floods along the White Volta and its tributaries in Northern Ghana. Since 2007, the Bagre Dam opened its flood gates leading to catastrophic effects on the communities leaving along the banks of the Volta River and having an impact on the food security situation of the country. National disaster management organisations have always battled the disasters that follow the opening of the Bagre Dam floodgates.[37]

These effects on the people has however not caused any conflict between the communities in Ghana and their counterparts on the Burkina Faso side of the river banks, or between Ghana and Burkina Faso.[38] Hon Boniface Gambila noted that the Ghanaian communities along the White Volta River banks are always rather in conflict with the Ghanaian government, blaming government for doing very little to assist them any time they are affected. [39] This assertion was corroborated when it was noted that in 2008, after the floods, a review team from the VRA was attacked by members of the Bazua community in the Bawku West District of the Upper East Region. They accused the VRA of complicity with the Burkinabe government to release the water to destroy their livelihood and for the VRA to benefit since the water is expected to end up at the Akosombo Hydro Dam operated by the VRA. They equally accused the John Agyekum Kufuor's government and rained insults on the then president, accusing him of selling the Volta River to the Burkinabe government and allowing them to be operating at will. [40]

In the words of Amonzem,[41] "Ghana has no bad blood with Burkina Faso regarding the annual opening of the Bagre Dam spillways, or not contributing to alleviate the suffering of the affected people". He noted that the issue is not impacting negatively on Ghana-Burkina Faso relation despite bad reportage from the media and arguments from the general public who think Ghana should take Burkina Faso on for its action. According to him, officialdom understands the operations of a hydro dam, and noted that Burkina Faso does not spill water from the Dam to deliberately cause harm to Ghanaians. He further noted that the neighbouring country only spill excess water when it is necessary, to save their river and national interest, which Ghana is fully aware of. The spillage of the Bagre Dam is compared to similar action at the Akosombo Hydro Dam in Ghana some years back when the Dam water reached its maximum level. During those

spillage, the resulting floods affected communities downstream within Ghana, and Ghana could not have blamed itself for saving its dam.[42]

The VRA, which is in constant touch with SONABEL, operator of the Bagre Dam, constantly provides briefs to the government of Ghana on the operations of the dam and to diffuse the tensions being brewed my some misinformed media and some members of the general public. For instance, contrary to media reports quoting the NADMO that about 26 deaths were caused by flooding as a result of the opening of the spillways of the Bagre Dam in 2014, VRA investigation concluded that only five deaths could directly be linked to the Bagre Dam spillage. This was duly communicated to the government of Ghana. [43] The annual consequences of the spillage on the affected communities in itself would not cause a conflict between the two countries, but the potential source of conflict could be the misinformed and unsubstantiated media reportage and writings of some members of the general public, especially respectable persons and those in academia.[44] These reports have the potential of misinforming the general public whose reaction could influence government response to the operation of the Bagre Dam.

The VRA however benefits immensely from the opening of the spillways of the Bagre Dam since the water released ends up at the Volta Lake and aids the operations of the Akosombo Hydro Dam. The opening of the Dam's spillways annually is therefore in the interest of the VRA and calls for cooperation between SONABEL and VRA and by extension Burkina Faso and Ghana.[45] These views were backed by some literature which suggests that in 2008, during the period of spillage of the Bagre Dam, the VRA through its director of hydro, Mr. Kirk Cofie, reportedly stated that the spillage of the excess water would have positive impact on the Volta Lake which is a major source

of hydro power for Ghana.[46]

A review of official communications file by the researcher at the MFA&RI revealed that, in 2007, Burkina Faso spilled the excess water from the Dam without prior notification to Ghana to prepare for the impact. These led to a heavy toll on Ghanaians. The Ghanaian government protested to the Burkinabe government on the basis of not giving notice before opening the dam. A delegation of stakeholders including technical persons from the Ghana VRA were despatched to Burkina Faso. After a two day meeting with stakeholders in Burkina Faso including officials of SONABEL, managers of the dam and the staff of the Ghana Embassy in Burkina Faso, a Memorandum of Understanding (MoU) was signed. Under the terms of this MoU, SONABEL was to constantly update the VRA of Ghana, through the Ghana Embassy in Ouagadougou, Burkina Faso, on weekly, to daily, to hourly basis, the progressive water level of the Bagre Dam, from July to September, depending on the rains and inflow to the dam and its tributaries. Since then the SONABEL has continually carried out this action, fulfilling the request of Ghana, thereby eliminating the potential blame that could come from Ghana government and could pose a threat to the peaceful coexistence between the two countries.[47]

To facilitate appropriate actions by the appropriate Ghanaian officials, the Ghana Embassy in Ouagadougou regularly update the Ministry of Foreign Affairs and Regional Integration (MFA&RI) in Ghana on the water level of the Bagre Dam and in many instances sends copies of such updates to the appropriate stakeholders such as the Upper East Regional Coordinating Council (UERCC) and the VRA.[48]

Despite the effects of the floods in the communities along the White Volta River and its tributaries, Hon. Gambila,[49] noted that the spillage of the Dam could be a source of cooperation between Ghana and Burkina Faso rather than of conflict, especially as the Ghanaian government is cognisant of the need for Burkina Faso to protect its dam and national interest, as well as the fact that the spillage is a means of increasing the inflow to the Volta Lake for operations of the Akosombo Hydro Dam in Ghana. He concluded that for as long as Burkina Faso plays its part in sharing information with Ghana on progressive water levels in the dam and its intentions of spillage, the dam could not be a source of conflict between the two countries either now or in the future. It was the responsibility of the Ghana government to adopt measures to arrest the effects of the spillage and to create a situation to rather benefit from the spillage.

During the field interviews by the researcher, documents sighted at the MFA&RI revealed that, in recognition of the need for cooperation, rather than conflict in issues regarding the operations of the Bagre Dam, at the 11th Session of the Ghana-Burkina Faso Permanent Joint Commission for Cooperation (PJCC) held in Ouagadougou from 8th to 10th October 2013, the two countries discussed water resources and noted that:

> The two parties also agreed to sustain collaboration on management of water resource through effective communication to avoid the challenges that occur along the course of the Bagre Dam whenever the dam is spilled. The need to reactivate the committee on water resource management between the two countries was also recommended… the Burkina party wished a better consultation and sustained communication of all stakeholders involved in the management of water resources of the Bagre Dam and downstream from this water area, namely: the technicians, water agencies, administrative authorities, communities, as well as the media for a broad diffusion of activities.[50]

Confirming the continual good relations and cooperation between the two countries even in the face of the untold hardship on the various communities along the White Volta catchment area anytime the Bagre Dam is opened, an official of the Ghana Embassy in Ouagadougou, Burkina

Faso, in an interview with the researcher noted that Ghana and Burkina Faso have had bilateral cooperation in many spheres and the operations of the Bagre Dam could not be a major source of conflict. He stated that except in 2007, when the dam was opened by its operators without adequate notification of Ghanaian authorities, Burkinabe authorities has always given Ghanaian authorities adequate notice, with regular update on progressive water levels of the Bagre Dam from July to September (Sample attached as appendix III). He added that in most times the embassy, administrative authorities of the Upper East Region and Ghanaian media have been invited to witness the opening of the spillways.

The Embassy also noted that as part of the cooperation between Ghana and Burkina Faso, on issues of the operations of the dam, SONABEL has in recent years agreed to always anticipate and commence the opening of the spillways even before the dam reaches its maximum retention level. This is normally done to allow the opening of a single overflow channel to control the amount of water that is sent out to reduce the impact downstream. Burkina Faso is also said to have nursed the intention of renovating the dam to increase its height and strengthen its banks to enable it take more water, having already done so in 2008 since its construction. Ghana sees all these actions as being cooperative and collaborative initiatives and does not see the Bagre Dam as a potential source of conflict or a relationship strainer. The mission concluded that it is on behalf of the Ghanaian government collaborating with the Burkinabe government so as to provide timely, accurate and reliable information to the Ghanaian government to take necessary steps to ensure the safety and welfare of downstream communities.[51]

According to Hon. Musah Hamba,[52] corroborated by a host of other interviewees, the Bagre Dam spillage is unlikely to be a source of conflict between the Ghanaian and Burkinabe communities along the water border of the two countries, neither can it constitute any threat to the relations between Ghana and Burkina Faso. The communities understand that the floods are natural occurrences, and are aware that when the Bagre Dam reaches its maximum limit, the water must be spilled. They therefore have no bitterness against Burkinabe communities and authorities. The communities are fully aware that the process is not intentionally carried out to cause harm. They appreciate the fact that the Burkinabe authorities in recent years shows compassion and human face by giving adequate notice to downstream Ghana before the spillage.[53]

Residents and farmers in the communities usually affected, admits that they are aware of the annual flooding situation along the White Volta River and its tributaries but unable to resist the temptation of farming close to the river banks because of the fertile nature of the banks. They are poor and unable to purchase chemical fertilizers, without which they are still assured of good yield when they farm on the river banks. Farming is carried out on the river banks with the hope that crops will be harvested before the spillage of the Bagre Dam. Neither the Burkinabe authorities nor communities would therefore be blamed following the destruction of the farms by floods compounded by the spilling of the Burkinabe dam. The communities in Ghana continue to do business with their Burkinabe counterparts without any tension resulting from the floods as a result of the Bagre Dam spillage.[54]

Primary data obtained from an interview conducted by the researcher at the Burkina Faso Embassy in Accra confirmed earlier information that, Ghana and Burkina Faso has a historic relationship

that dates back to pre-independence. Mr. Sakre Fidele Zida noted that, the Mossi, the dominant ethnic grouping in Burkina Faso have ties with some ethnic groups in Northern Ghana, just as some other smaller tribes also do. These tribes straddles the common borders of the two countries, and this has impacted positively on the relations between the communities and the two countries. The Volta River Basin is a shared water resource between the two countries, and have an impact in the relations of the two countries. Since the construction of the Bagre multi-purpose dam on the White Volta River, Ghana and Burkina Faso have collaborated successfully to ensure that the operations of the dam results in much better cooperation rather than conflict. [55]

The construction of the Bagre Dam was completed in 1992, and due to the cooperation between Ghana and Burkina Faso, in 1996, when Burkina Faso intended to construct a second dam at Kompienga, on the Black Volta which also flows into Ghana, Ghana did not raise any objection. To satisfy a World Bank condition to grant a loan to Burkina Faso to carry out the construction, a delegation from Ghana travelled to Ouagadougou, Burkina Faso to sign a "no objection" document to enable Burkina Faso access the World Bank loan. Since 2007, the Burkinabe authorities have also cooperated with Ghanaian authorities to ensure minimal destruction downstream during the spilling of the Bagre Dam. Burkinabe authorities, particularly technical personnel from SONABEL and their counterparts from VRA in Ghana have collaborated effectively, especially on information sharing regarding water levels at the Bagre Dam and agreed levels of spillage. [56]

On several occasions, media reports and articles written by some academics and published in newspapers seek to create an impression in Ghana as if Burkinabe authorities are insensitive to the plight of downstream communities in Ghana. Though these reports have the potential of inciting

conflict, on the contrary, competent authorities in both countries are cooperating on the realities, and continue to effectively share information on the effective management of the Bagre Dam and the Volta River Basin in general, to mitigate the impact on downstream communities. These situation makes the Bagre Dam a potential source of cooperation, rather than source of conflict.[57]

Corroborating the cooperation between Ghana and Burkina Faso which stems from the management of the Bagre Dam, Founémé Millogo, in an interview with the researcher confirmed that, SONABEL is the manager of the Bagre Dam and deals with the VRA in Ghana as far as activities regarding the spillage is concerned. He further disclosed that Ghana and Burkina Faso has a good relationship and that during the period of intense rains, SONABEL does not wait to have the dam reach its maximum level before carrying out spillage since that could be disastrous as an overflow or collapse of the dam would cause more harm. In this regards, the two institutions are in constant touch, especially in the months of July, August and September. Sometimes, the two institutions exchange emails on daily basis, bypassing other official channels of communication such as the embassies. This is done to ensure timely and adequate information delivery. He noted that for as long as this technical understanding continues, and the Burkinabe authorities through SONABEL are committed to this agreement, the Bagre Dam cannot be a source of conflict, but rather a source of cooperation between SONABEL and VRA and for that matter between Ghana and Burkina Faso.[58]

Burkina Faso is well aware of the effects downstream whenever the Bagre dam is spilled, usually between July and September, However, these effects have led to an increased collaboration between the riparian local communities upstream and downstream, bringing them together as they

share information on inflow of water in the White Volta and its tributaries to avoid catastrophic effects. Between Burkina Faso and Ghana, the operations of the Bagre dam has led to strengthening collaborations, especially in the field of transboundary water management, which has led to the creation of the VBA, and the development of a code of conduct between the two countries in water management.[59]

The primary data gather from interviews and focus group discussions with relevant stakeholders has in no small way suggest that the Bagre Dam has in many ways promoted collaboration and cooperation between communities downstream in both Ghana and Burkina Faso and between the two countries at the inter-state level as well. This condition would however remain so if Burkina Faso continue to share adequate information with Ghana regarding the operation of the dam.

3.3 National and District Measures in Place to Minimise Effects and Possibility of Conflict

Instead of allowing the impact of the floods to degenerate into a source of conflict between the communities along the White Volta and sharing boundaries with Burkina Faso which can lead to conflict between the two countries, the governments of Ghana, Burkina Faso and some international organisations, have put in place some measures to reduce the effects of the floods compounded by the spillage from the Bagre Dam on the communities that have always been affected. Among the measures instituted as was discovered during field interviews conducted by the researcher are: [60]

The institution of sensitisation of the communities since 2007, upon receipt of information from authorities regarding spillage of the Bagre Dam. This sensitisation is usually done by officials from

the NADMO, VRA and community leaders such as Chiefs and Assembly members through medium such as the use of town criers, announcement by information service vans, and through FM radio announcements.

The concerned Districts have instituted measures of identifying safe havens where victims of floods would be housed in the event of an occurrence. These safe havens are school buildings, churches and other public places that are situated upstream far from the river banks.

NADMO has been in consultation with the Ministry of Food and Agriculture (MOFA) to supply farmers with seeds of early maturing crop so that they could harvest before the time of spillage of the Bagre Dam.

In the Bawku West District of the Upper East Region, which has the highest number of flood prone communities along the White Volta Basin and its tributaries, the government of Ghana through NADMO, in 2015 set up an Emergency Operation Centre (EOC), to ensure swift and adequate communication with appropriate authorities in the event of flood disasters. This is meant to provide swift and adequate response in other to minimise the effects of floods in the District.

The United Nation Development Programme (UNDP), In collaboration with other partners including the Norwegian Embassy in Ghana, through NADMO have instituted a support program in the Districts usually affected by flood waters from the Bagre Dam to assist affected farmers to regain their livelihood. In the Bawku West Districts, some farmers in communities affected annually by the floods are provided with pumping machines, since 2014, to enable them move

uplands to carry out irrigated farming. This program is being replicated in pilot phase in some communities in the Bawku East municipality and the Binduri District, where the NADMO district coordinators have been asked to prepare action plans for flood disaster response along the White Volta River and its tributaries for 2016.

Founémé Millogo[61] disclosed that "Burkinabe authorities since 2007 also agreed with their Ghanaian counterparts through SONABEL and VRA to commence the process of spilling anytime there are indications of high inflows into the Bagre Dam even before the dam reaches its maximum capacity of 235metres". This, he noted is to allow for maximum controlled spilling to avoid flash floods downstream. Since 2009, Ghanaian authorities, either from Ghana or the Ghana Embassy in Ouagadougou and the Ghanaian media have always been part of the ceremony to commence spilling of the dam. The VRA of Ghana and SONABEL have also signed a memorandum of understanding that among other things mandates SONABEL to inform the VRA of water levels in the dam as well was when it will carry out spillage. This enables Ghana to undertake sensitisation in the communities usually affected by the spillage, with the aim of minimising the effects when the dam is spilled.[62]

These measures have helped in ensuring that communities along the White Volta River and its tributaries have always had adequate and timely information about the impending spillage of the Bagre Dam, and have always had ample time to move upland before the spillage is carried out. [63] This has in recent years minimised the effects of the spillage on the communities and thereby reduces the potential tension between Ghana and Burkina Faso.

3.4 Institutional Collaboration between Ghana and Burkina Faso to Minimise the Risk of Conflict

As part of cooperation between Ghana and Burkina Faso to manage their water resources including the White Volta sub-basin and infrastructure in it, the two countries and the other riparian countries of the Volta River Basin, with the assistance of the Water and Nature Initiative (WANI) formed the Volta Basin Authority (VBA) in 2007, with headquarters in Ouagadougou, Burkina Faso and with the view to ensure an effective management of the water and other resources of the Volta basin as well as adopt measures to minimise the negative impact of uncontrolled exploitation of the Volta basin. Through the VBA, the Volta River riparian countries, especially Ghana and Burkina Faso who together share about 85% of the basin have benefited from projects including local and joint capacity building and the establishment of joint transboundary committees to ensure efficient water governance in the basin and fosters cooperation and conflict resolution between them.[64]

The two countries through am MoU signed by their respective ministers of Water Resources in 2004, formed the Ghana-Burkina Faso Joint Technical Committee on Integrated Water Resource Management (JTC-IWRM). This committee plays a predominant role in cross-border water resources management, including the Bagre Dam. Since 2011, the JTC/IWRM has reportedly been effective, and hold regular meetings to discuss and recommend remedies to transboundary water issues and enhance the bilateral collaboration on risk management. The 7th meeting of the JTC/IWRM was held in Tamale, Ghana on 16/06/2011.[65]

There is also in existence, An MoU signed between the two countries in 2007, through the VRA of Ghana and SONABEL of Burkina Faso, which mandates SONABEL to share information of progressive water levels and planned dates of spillage with VRA. Since the signing of the MoU,

Burkina Faso is said to have lived up to expectation with regards to information sharing on the Bagre Dam with Ghana.[66]

The Ghana-Burkina Faso PJCC includes a component for discussions of water resource development and sanitation, under which issues regarding operations of the Bagre Dam are discussed.[67] The PJCC holds annual meetings and have been effective in ironing out issues with regards to the operations of the Bagre Dam that could degenerate into conflict.

3.5 Conclusion

Despite the tension and concerns felt in Ghana regarding the effect of the spillage of the Bagre dam in Burkina Faso, especially among the media and some members of the general public, there has not been any conflict between the two countries. This is due to the informal and formal mechanisms that exist between the two countries which has added in minimizing the potential of a conflict between the two countries. The Ghanaian government is also aware that the VRA needs the excess water from the Bagre Dam to enhance the performance of the Akosombo Hydro Dam, as well as the fact that the Burkinabe authorities have not acted in bad faith but are always sensitive to the safety of downstream communities in Ghana. The operations of the Bagre Dam should not be viewed only as a potential source of conflict but should also be seen as being a potential cause of cooperation in Ghana-Burkina Faso relations. Kofi Annan, the former Secretary General of the United Nations, on Transboundary water issues is known to have said that:

> Water problems of our world need not be a cause of tension; they can also be a catalyst for cooperation if we work together, a secure and sustainable water future can be ours.[68]

Endnotes

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CHAPTER FOUR

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

4.0 Introduction

This chapter summarises the research findings, draw conclusions and makes recommendations for consideration by policy makers for appropriate actions.

4.1 Summary of Findings

The researcher set out in this research to ascertain the effects of the annual spillage of the Bagre multipurpose dam, constructed in 1992 on the White Volta in Burkina Faso, on downstream communities in Ghana, and its impact on Ghana-Burkina Faso relations. The specific objectives of the research were 'to ascertain the effects of the Bagre Dam on the affected Ghanaian communities, to analyze the effects of the Bagre Dam Spillage on Ghana-Burkina Faso Relations since 1992, and to find out measures being taken by Burkina Faso and Ghana to reduce the impact of the annual spillage on the downstream communities.' By these objectives, the research among others used primary and secondary sources to examine institutional collaborations put in place to reduce the damage of the annual floods in the districts usually affected.

The first finding of the research is that, prior to the construction of the Bagre Dam, relations between Ghana and Burkina Faso since independence have fluctuated between cordial to acrimony, hostile, mutual mistrust and suspicion. The basis for this relationship has mostly been influenced by leadership style, ideological affiliation and personal relationship between leaders of the two countries at various times. Nevertheless, Ghana and Burkina Faso has never been engaged in any open confrontation.

Further, the research reveals that, floods on annual basis, exacerbated by the opening of the Bagre Dam, causes devastating consequences in the Bawku West, Binduri and Talensi districts, and Bawku East Municipality resulting in effects such as loss of human lives, destruction of farmlands and farm products including maize, rice, millet and sorghum, destruction of houses in some of the communities and loss of livestock. This leads to seasonal hunger and increases poverty in the communities, forcing the youth in the communities to migrate to the southern part of the country for greener pastures. These consequences however, have not negatively affected the relations between Ghana and Burkina Faso.

The findings further show that some measures are being put in place at the District and national level to minimise the effects of the flooding, including the institution of sensitisation programme for communities along the White Volta Basin and its tributaries upon receipt of information from authorities regarding spillage of the Bagre Dam, identification of safe havens where victims of floods would be housed in the event of an occurrence, the supply of seeds for early maturing crop to farmers to plant and harvest before the Bagre Dam spillage, the setting up of Emergency Operation Centres (EOC) in flood prone districts. Burkinabe authorities have also ensured controlled spillage to manage the level of water spilled at various time. This, however, depends largely on the level of inflow to the dam.

The research was guided by the hypothesis, 'the use of cooperation as a tool in Ghana-Burkina Faso relations would help address the negative effects caused by the Bagre Dam spillage on the livelihoods of affected Ghanaians.' An analysis of both secondary and primary data collected, validate the hypothesis. The research findings show that the Bagre Dam spillage has led to

cooperation rather than conflict between Ghana and Burkina Faso, and that both local level and national initiatives are being taken to minimise the effects of the floods resulting from the spillage of the dam, on the people of the usually affected communities, and improve relations between the two countries in the transboundary water management.

The Cooperation Theory which is applied in this research, posits that international cooperation is the voluntary adjustment by states of their policies so that they manage their difference and reach consensus for a mutual benefit. This is encouraged by the existence of common interest. Game theory is the basis of how collaboration can be achieved in a competitive world, where the choice of one country affects the other, in this case, of upstream and downstream riparians. Unilateral action results in defection which leads to conflict, while consultative and collaborative initiatives leads to cooperation, understanding and the avoidance of conflict. The basic problem both theories address is common tension between states. In consonance with this, the research findings shows that unilateral action on the part of Burkina Faso can make the Bagre Dam a potential source of conflict between the two countries, while the current cooperative and consultative initiative on the part of Burkina Faso makes the management of the Bagre Dam a source of promotion of cooperation between Ghana and Burkina Faso rather than conflict.

Burkina Faso's action in opening the spillways annually is understood to be a necessity rather than an intentional act to cause harm in Ghana. This understanding, coupled with Burkina Faso readiness to share information on the progressive levels of water in the dam and to timely inform Ghana on scheduled spillage as well as the country's readiness to sacrifice by spilling even before the maximum level of the water is reached, makes the Bagre Dam a source of cooperation rather

than of conflict in Ghana-Burkina Faso relations.[1]

Literature reviewed in this the research indicates that transboundary cooperation between Burkina Faso and Ghana is necessary, to avoid upstream-downstream conflict, as they share the Volta River Basin. The literature also reveal that while press reports on international waters often focus on conflict, there are more cooperation than there are conflicts in transboundary water issues the world over, and that Transboundary Rivers with relatively stronger institutions can act as unifiers. The research findings confirm this, as it reveals that despite media reports in Ghana labelling the Bagre Dam in Ghana-Burkina Faso relations as a potential source of conflict, the finding shows the dam is a key source of cooperation between the two countries.

Reviewed Owusu, Henry J. (2011) article "Conflict and Cooperation among the Riparian Countries of the Volta River Basin in West Africa", floods in Northern Ghana, contributed to by the opening of the Bagre Dam were further identified as one of the sources of tension between Ghana and Burkina Faso. The research findings show that for as long as the two countries cooperate in taking initiatives, including sharing of information regarding the operations of the dam, the floods would not lead to conflict between them.

4.2 Conclusion

There is a growing literature which suggest that transboundary waters could be the cause of future interstate warfare. In reality however, contrary to what the water wars literature would have one believe, more cooperative treaties have been signed resulting in less conflicts in transboundary water issues.

The study concludes that the spilling process of the dam is in the mutual interest of both Burkina Faso and Ghana, and authorities of Burkina Faso have not been acting unilaterally, but has always informed their Ghanaian counterparts before spillage. The need to inform Ghana which result from cooperation between both countries is to enable Ghanaian authorities sensitise members of the communities living along the White Volta and its catchment areas. This reduces the effects on the livelihood of the communities, and eliminates the potential of a conflict between the two countries.

Though the research findings showed a contrary view to some secondary data that portray the Bagre Dam as a potential source of conflict in Ghana-Burkina Faso relations, it must be noted that if the impact on the communities in Ghana is not well managed, and if Burkina Faso fails in its duty of duly and timely informing Ghana of its intensions to spill, it can disrupt the good historical and current peaceful co-existence between the two countries. The Bagre Dam should not be seen as a tool which benefits upstream Burkina Faso and destroys livelihood in downstream Ghana, but should be seen as a unifier and managed to mutually benefit upstream and downstream users.

4.3 Recommendations

To avoid any future potential conflict between the two countries resulting from the activities of the Bagre Dam, and based on the findings of the research, the researcher makes the following recommendations:

First, Ghanaian authorities need to negotiate an internationally binding agreement with Burkina Faso regarding the operations of the Bagre Dam. The continued adherence to agreement between

Ghana and Burkina Faso, in which the latter shares information about water levels at its dam with the former, is a sure bet of eliminating any form of potential conflict between the two countries. However, a more concrete internationally binding agreement between the two countries could properly enhance the potential of complete elimination of conflict and foster good relations between the two countries. Wolf,[2] notes that, once cooperative water regimes are established through signed treaties, they turn out to be tremendously resilient over time, even between otherwise hostile riparian countries, even as they continue to disagree in other areas of their international relations.

Second, the government of Ghana with cooperation from the Burkinabe government should seek international assistance to construct a Hydro Dam downstream across the Ghana-Burkina border. This dam could be filled with water from the tributaries of the White Volta and the spilled water from the Bagre Dam, and used productively to the benefit of both countries. In this case, Ghana could then manage the dam to generate hydro power to supply electricity to some communities in Northern Ghana as well as in Burkina Faso. The water from the dam could then be used to encourage irrigated farming in Northern Ghana for purposes of food security. It could also provide jobs for the several unemployed youth and improve rural livelihood thereby discouraging rural-urban migration and its attendant consequences including over populated cities and increased crime. For example, in conjunction with a 1957 agreement in the Mekong River, Thailand helped funding a hydroelectricity project in the Laos in exchange for a proportion of the power to be generated.[3]

Third, the sensitisation programmes of the Government of Ghana on the effects of the floods in

the communities along the Bagre Dam, should not be limited to only the period when Ghanaian authorities are notified by their Burkinabe authorities of their intention to open the water way. It should be an all year round activity, meant to inform and educate the local people on the need to stay at certain determined distance from the banks of the White Volta and its tributaries. Relevant Ghanaian authorities such as NADMO and VRA should also endeavour to sensitise the general public, including people not connected to the floods and particularly the Ghanaian media on the fact that the annual floods cannot be entirely blamed on Burkina Faso, since heavy rains in the north during the period contribute greatly to the disasters.

Fourth, journalists should be encouraged through relevant training platforms education to desist from unsubstantiated reportage but rather verify their information from the appropriate stakeholders before putting out in the public domain. The media should be regularly briefed about the cooperative attitude of Burkina Faso in the management of the Bagre Dam. When this is done, the usually unsubstantiated reportage by the media and unassessed writings by some members of the general public, will be curtailed, as such reports and write ups has the potential of inflaming passions and disrupting the historic and current peaceful relations that exist between Ghana and Burkina Faso.

Fifth, the government of Ghana should continually educate members of the usually affected communities on the need to desist from farming activities on the banks along the White Volta Basin and its tributaries. This can be successful by planting trees along the banks. Some productive trees such as mango and guava could be planted which will benefit the communities in the long term. In this regards, alternative arrangements including the provision of subsidised fertilizer for farmers

to farm away from the river banks will be necessary. The provision of water pumps to allow farmers undertake dry season irrigated farming would also increase their incomes and motivate them to leaving farming close to the river banks in the raining season.

Finally, Ghanaian authorities should discuss with their Burkinabe counterparts during JPCC meetings, about modalities to get Burkina Faso agree to financially and materially assist affected communities whenever activities in the Bagre Dam result in unbearable consequences in those downstream communities.

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APPENDICES

Appendix I

S/NO.	NAME OF COMMUNITY	NUMBER OF AFFECTED FARMERS	CROP TYPE	NUMBER OF HECTARES AFFECTED
1.	Bugula	56	Maize and Sorghum	26
2.	Atabire	30	” ”	25
3.	Gbeongo	40	” ”	23
4.	Galaka	58	” ”	30
5.	Gozongo	50	” ”	27
6.	Salpiiga	58	” ”	29
7.	Googo	40	” ”	23
8.	Kobore	35	” ”	20
9.	Yarigu	55	” ”	30
10.	Timonde-Natinga	47	” ”	25
11.	Timonde-Goriga	50	” ”	31
12.	Timonde-Guure	53	” ”	27
13.	Biringu	47	” ”	26
14.	Saka	38	” ”	20
15.	Tanga Kpalsako	43	” ”	20
16.	Boya Kpalsako	49	” ”	23
17.	Boya	42	” ”	18
18.	Kopella	39	” ”	22
19.	Gabulinga	49	” ”	23
20.	Kare-Natinga	35	” ”	15
21.	Sapellinga	44	” ”	22
22.	Zongoire	50	” ”	28
23.	Dagunga	52	” ”	25
24.	Gumdago	50	” ”	30
25.	Nintanzoa	50	” ”	35
26.	Peri	50	” ”	27
	Total	**1, 2000**		**650**

(List of communities showing the flood effects in figures in 2015).