# The Bui Dam Impact on Ghana-China Relations: Transparency, Accountability and Development outcomes from China's Sino Hydro Dam Project in Ghana

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## Abstract

The current Afro-Chinese relations on development projects in Sub Saharan Africa has come under a lot of scrutiny, with some experts in the South-to-South relationship discourse claiming the above short-gun-marriage will hurt Africa in the long run while other experts and African leaders believe it is the best strategy to help Sub Saharan Africa develop economically and infrastructure wise.

This thesis examines the Bui hydroelectric dam project, which is currently under construction in Ghana by Sino Hydro (Chinese Company), with financing coming from the Chinese government through the Exim Bank of China. It compares how the Akosombo that was financed by the World Bank in the 1960s handled the social and physical ramifications caused by the project, and how Sino Hydro is approaching the same issues that will be created by the Bui dam project.

It reveals that the government of Ghana and the Bui Power Authority were very careful about the planning process they adopted to ensure that displacement and resettlement on the project site was handled professionally by Sino Hydro to ensure the smooth running of the project. They applied International Financial Corporation's (IFC-P7) standard on large development projects, even though the Bui dam was being constructed and financed by China. Supporting the fact in order for Africans to benefit from the Afro-Chinese relations, they have to ensure that the proper structures are in place before negotiating contracts that will result in a win-win outcome with the Chinese, and how these structures are still heavily influenced by the Northern standards.

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I want to thank the entire staff and faculty of MIT Department of Urban Studies of and Planning for the value that they have added to my life throughout the two years of my education. My special thanks goes to Mary Jane Daly of DUSP and John Tirman the Executive Director of MIT Center for International Studies, for making it financially possible for me to travel to Ghana to conduct my field research on the Bui dam, even though funds were not available.

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## Chapter One

## Introduction

## South-South Relations

"Fifty years after China established its first diplomatic ties with an African country, the third summit of the forum on China – Africa Cooperation was held in Beijing from 3 – 5 November 2006. This was the biggest-ever gathering between Chinese and African leaders. Significantly, all the 48 African countries that currently have diplomatic relations with China took part in this meeting, and their heads of state led most of the delegation" (Kwesi Kwaa Prah, Sept 2007).

The South-South relations are forms of interactions between actors representing economically weak and relatively powerless countries.[1] The majority of the South-South relations have been designed to promote and empower less developed countries (LDCs)[2] both economically and militarily, through the promotion of trade and culture, military assistance, transfer of technology, investment and development between the LDCs. The South-South relation's strategy is expected to build the economies of the LDCs in a more effective way than the North-South relations that has been in existence prior to independence and post independence of most LDCs, especially in Sub Saharan Africa. The homogenous history that most of the LDCs share in areas such as relative political instability, military rule,

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[1] See H. Jon Rosenbaum and William G. Tyler (1975) South-South Relations: The Economic and Political Content of Interaction among Developing Countries.

[2] Less Developed Countries.

colonization, human rights issues, struggle for independence, "natural resources curse", poverty and exploitation set the stage for building a strong relationship to develop themselves with minimum influence from the North.

However, can the South-South discourse economically empower LDCs without any form of assistance from the North? Does the North have a role to play in the development of the South-South relationship? Is it best to keep the North-South relations alive, while promoting separate and distinct South-South relations? How much influence does powerful Southern nations like China and Brazil have over the less powerful Southern countries when playing the South-South game? Which areas should the South-South relationship focus on more, in terms of development? What is the role of international organizations in the South-South relationship? How do these organizations play their role? How much influence do these organizations have on the LDCs as compared to Northern nations' influence? How realistic is the South-South paradigm in achieving economic independence for its members? How sustainable is the South-South relationship? Which countries benefit most from the South-South relations?

My thesis topic titled "The Bui Dam Impact on Ghana-China Relations: Transparency, Accountability and Development outcomes from China's Sino Hydro Dam Project in Ghana" will be used to answer the above questions by delving into the current relationship between China and Africa (Sino Africa) on the development front, using the current construction of the Bui Dam in Ghana by China (Sino Hydro)

as a case study, to understand the socio-political impact of the South-South relations discourse. Prah (2007), argues that by and large, China's approaches to African countries are currently making a positive difference to the African economies,[3] while Rosenbaum and Tyler argue that even though the interaction among less developed countries (LDCs) are increasing steadily, they are still far less influential than the North-South relations, yet the North cannot be viewed as a monolith in its relations with the South.[4]

According to Rosenbaum and Tyler, the oil crisis in the 1970s caused LCDs to be more concerned about the security of nonmilitary supplies. Similar apprehension was provoked by the difficulty in obtaining supplies during both world wars. The above hostilities forced LDCs to fend for themselves and develop local resources.[5] It is fear of the above examples that have contributed to the development of the South-South relations, in order to enable LDCs to achieve economic independence without having to rely solely on the North for the supply of strategic commodities in times of dire need. However, the fear of the most powerful LDCs dominating the less powerful LDCs both economically and politically has resulted in the development of a rather strong North-South relations and LDCs interaction with international organizations has also strengthened. As an example, Argentines, which has

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[3] See Kwesi Kwaa Prah (September 2007) China and Africa: Defining a relationship.

[4] See H. Jon Rosenbaum and William G. Tyler (1975) South-South Relations: The Economic and Political Content of Interaction among Developing Countries.

[5] See H. Jon Rosenbaum and William G. Tyler (1975) South-South Relations: The Economic and Political Content of Interaction among Developing Countries.

experienced years of economic stagnation, fear that Brazil's new prosperity will permit it to dominate Latin America economically and Politically.[6]

The above assertion clearly shows how the South-South relations among LDCs are surrounded by doubts and uncertainties, prompting Rosenbaum and Tyler to argue that the interstate politics among developing countries are weak relative to those on the North-South or North-North planes. They argued that developing country interactions with international organizations, depending of course on the institution in question, are some ways similar in terms of intensity to North-South relations; they are more intense than bilateral interactions between individual LDCs. They believe there exists a relative weakness in bilateral South-South interactions and a relative strength in LDCs interactions with international organizations, hence international organizations seem to represent a workable mode for intensifying South-South relations for the achievement of common ends. The above assertion is demonstrated in Figure 1 below with a diagram showing a simplified paradigm of North-South-South interstate politics and transnational interaction. It depicts how LDCs and international organizations are more strongly tied to the waist relationship-wise than among LDCs themselves.

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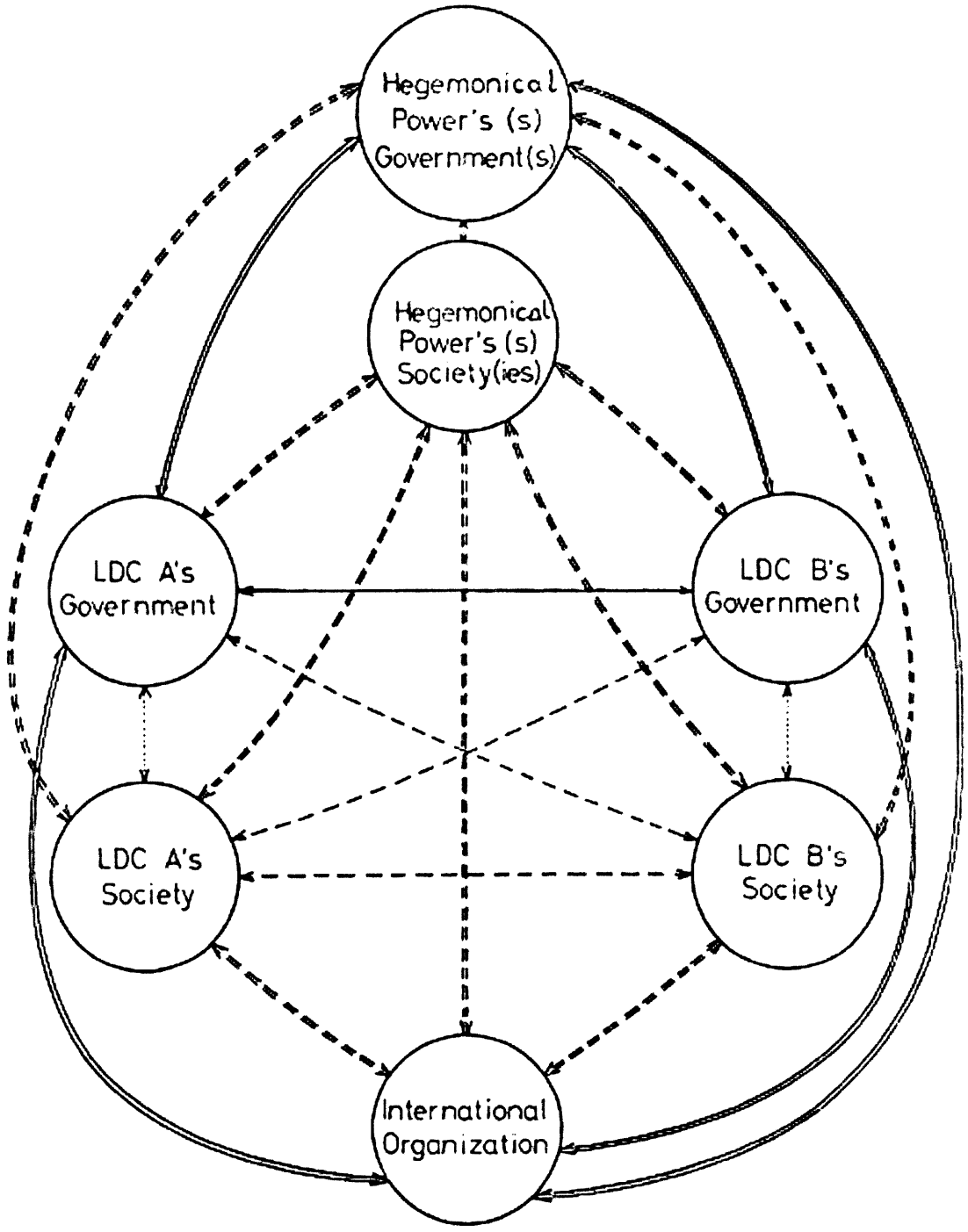
[6] See H. Jon Rosenbaum and William G. Tyler (1975) South-South Relations: The Economic and Political Content of Interaction among Developing Countries.

**Figure 1. The effects of interstate politics and transnational interactions on the impact of the North on South-South relations**



Kwesi Kwaa Prah on the other hand, argued that trade between China and Africa jumped 39 percent to $32.17 billion in the first ten months of 2005, fueled by increase oil imports and export of Chinese goods, largely textiles. The Sino-African trade could see China outstripping the United States' preeminent position in the next few years, with US-Africa trade estimated at $44.5 billion in 2004.[7] South-South trade between Sub Saharan Africa and China has steadily increased over the years, despite the relatively low South-South relationship between poor and less powerful LDCs. The trend in the South-South relationship that is more prominent these days is eminent between the more powerful Southern countries and the less powerful Southern nations, with the less powerful LDCs depending more on the powerful LDCs to embark on development projects. The assertion above counters Rosenbaum and Tyler argument regarding Argentina's concern about Brazil's possible domination of the economic and political environment of South America.

However, the fear of political and economic dominance by a powerful nation like China among less powerful LDCs cannot be underestimated, given the complains made by some countries in Sub Saharan Africa regarding China's involvement on the African continent. China outpaced Japan in 2003 to become the world's second largest consumer of oil after the US, with Chinese oil consumption growing by about 7.5 percent per year.[8] According to Prah, China currently imports one-third of its oil needs and it is projected that by 2025 China will import two-thirds of its oil needs.

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[7] See Kwesi Kwaa Prah (September 2007) China and Africa: Defining a relationship.
[8] See Kwesi Kwaa Prah (September 2007) China and Africa: Defining a relationship.

With Africa holding 8 percent of the world's proven oil reserve, it is not surprising that China has struck or expanded on existing oil arrangements with Angola, Algeria, Chad, Equatorial Guinea, Gabon, Nigeria and Sudan,[9] with half of Sudanese oil going to China. Sudanese oil makes 7 percent of China's imported oil, and the Chinese invested $8 billion in joint exploration contracts in Sudan in an attempt to ensure constant supply oil. An estimated 10,000 Chinese people are working in Sudan.

On the other hand, increased Chinese investment in development projects in Sub Saharan Africa can be viewed from two different sets of lenses. They have increased investment in less profitable sectors, which have been neglected or abandoned western interest, for example, Zambia's Chambezi copper mines and the supposedly exhausted oil reserves of Gabon.[10] According to Prah, the Afro-Chinese relationship has open doors for export of African commodities to the Chinese market, Burkina Faso sells a third of its cotton to China. Safo also underscores the above assertion by saying that "it is left with Africa to bargain properly, in fact protest against China's unfair trade practices that are killing local industries. After the summit, both China and Africa should be winners."[11]

Despite the low level of impact that the South-South relation is having on LDCs, compared to either North-South or South-International Organizations as argued by Rosenbaum and Tyler, there is a strong believe by some South-South experts like

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[9] See Kwesi Kwaa Prah (September 2007) China and Africa: Defining a relationship.
[10] See Kwesi Kwaa Prah (September 2007) China and Africa: Defining a relationship.
[11] See Amos Safo (2007) Ghana: Textiles Workers Slam Government.

Prah and other African leaders that the Afro-Chinese relationship will go a long way to help the continent develop. Prah argues that in order to strengthen and better understand each other "Afro-Chinese relations have got to reach more effectively into the area of culture and 'people to people relations'. There are indications that already Africans are joining the queue in endeavor needs to be greatly strengthened by increasing possibilities for such studies and learning processes in both Africa and China". Following the third Sino-African Summit, held in Beijing (November 2006), Ethiopian Prime Minister Meles Zenawi on his return commented enthusiastically about the meeting and commented that more Ethiopian agricultural products would be allowed into China duty-free. China had pledged some $500 million for various development projects in Ethiopia. 'China is an inspiration for all of us', he added. 'What China shows to Africa is that it is indeed possible to turn the corner on the economic development'.[12]

The Sino-African Summit held in Beijing on November 2006 resulted in the endorsement of a three-year action plan to drive a 'new type of strategic partnership" that would focus on pragmatic cooperation, equality and mutual benefit. China in terms of the plan undertook to:

- Double aid to Africa by 2009 (to about US $1 billion).
- Set up a US $5 billion China-Africa development fund to encourage Chinese companies to invest in Africa.

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[12] See Kwesi Kwaa Prah (September 2007) China and Africa: Defining a relationship.

- Provide US $3 billion in preferential loans and US $2 billion in preferential buyer's credits to African countries.
- Cancel all debt stemming from Chinese interest free government loans that matured by the end of 2005, for the 31 highly indebted and least developed countries (LDCs) in Africa that have relations with China (an amount estimated at around US $1.4 billion).
- Further open China's market to exports from African LDCs by increasing from 190 to 440, the number of products receiving zero-tariff treatment.
- Train 15,000 African professionals, double the number of Chinese government scholarships given annually to Africans (to 4,000) and send 100 senior agricultural experts and 300 youth volunteers.
- Build 30 hospitals, 30 malaria treatment centers and 100 rural schools.[13]

The commitments by China from the summit explains the reason why some South-South experts and African leaders believe the Afro-Chinese development discourse is a paradigm that will put Africa on its path to building a strong and sustainable economy, without having to rely on the North. It is due to the above assertion that I chose to study the Bui Hydroelectric dam under construction in Ghana by Sino Hydro (a Chinese company), with full financing for the project coming from the Export-Import Bank of China through the Chinese Ministry of Commerce. The purpose of my thesis is to understand into details, how and why the Chinese operate in Sub Saharan Africa and the structures or mechanisms put in place by the various

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[13] See Ernest Harsch (2007) Big Leap in China-Africa Ties: Beijing offers continent more aid, trade and business.

African governments to ensure positive outcomes for the current wave of Afro-Chinese investments are beneficial to all parties. Also study, how the politics involved in the Afro-Chinese relations gets complicated and what must be done by the host nations to ensure that they are not being taken advantage of when negotiating for development projects with China. Chinese developments and investments in Sub Saharan Africa in the 21st century, ranging from the construction of stadiums, airports, roads, and apartment buildings to that of dams, have raised a lot of eyebrows in recent times.

It has become obvious that Kwame Nkrumah's dream of the Akosombo dam leading Ghana into industrialization failed, given all the negative impact that the project has had on peoples live to date. The government of Ghana was keen on embarking on the Bui hydroelectric dam project, with the notion that it is the only way to drive the nation out of poverty and make its dreams come true. I will also attempt to answer the question; why did the government of Ghana decided to embark on the construction of the Bui dam, given the lessons learned from the Akosombo project four decades ago if any attempt was made to initiate a learning process?

The rest of my thesis will be structured as follows: The next two sections presents the core research questions and methodology of this study, going on to address the issues of our premise, about whether the best planning standards were applied to address the social and environmental ramifications of the project, why and how the Chinese choose to finance the project, who actually pushed for the project between

the Ghanaians and the Chinese and what are the payoffs to both parties, and finally, why there is a need for this research to be conducted?

Chapter 2 will be comprised of a summary of the Akosombo dam, which would be used as a case study in my thesis to enable me compare the Akosombo and Bui dam projects and how they were both handled regarding planning processes, compensation and environmental impact studies, the social ramifications that resulted due to the projects and what lessons were learnt by Ghana from the Akosombo dam and how those lessons, if any at all, would impact the Bui dam project. Chapter 3 will lay down into details the background of the Bui project and the history of the indigenous people living in the Bui area and along the Black Volta River where the dam construction is currently underway. This chapter will also break down the land use and ownership policy being practiced in Ghana and how it affects the indigenous people, and the politics of the government in acquiring the lands for the project.

In chapter 4, an overview of the Bui dam project focusing specifically on the contract, the planning process; feasibility studies and social survey conducted prior to the sod cutting and post sod cutting. Chapter 5 will focus on analyzing the overall project, to determine its impact on the environment, its social impact, economic impact, and cost and benefits to both Ghana and China (Sino Hydro). Chapter 6 will consist of conclusion, including policy implications and recommendations based on the findings and further areas of research.

## 1.1 Core Research Questions

This thesis will attempt to the answer the 4 main research questions below:

- What planning standards are being used for the Bui dam construction and why?
- Why is China playing a major role in the project, from financing to design to construction?
- What do the Chinese get from the construction of the dam, besides the financial payment for the loans granted and construction? How also then does the Chinese government benefit?
- Why did the Ghanaian government decide to embark on the construction of the Bui dam, given the lessons learned from the failure of the Akosombo dam project?

## 1.2 Methodology

In order to answer the question of why the recent "South to South" relationship between China and most Sub Saharan African countries has begun, and its impact on development in the region given the trade-offs between the governments, I employed several research instruments to examine the Bui dam project ongoing in Ghana. The Bui dam serves as a good case study to research and analyze for a number of reasons. First, the Bui dam represents one of the many development projects being undertaken by the Chinese in Sub Saharan Africa, and it is being fully financed by the Export Import Bank of China, which makes it significant and unique among these projects, because of the implications to the Chinese government, not

only corporate involvement. Dam projects have caused a lot of disaster in the world, but the Three Gorges dam in China, is perceived to be a relative success given how the Chinese handled the environmental and resettlement problems that resulted from the project. Finally, most of the Chinese-involved development investments in Sub Saharan Africa are big projects that generally have negative consequences on indigenous or marginalized low-income populations, like the residents of Bui. It is thus prudent to investigate how the Bui dam project relates to all the above-raised issues. The Bui dam project is now in progress, with phase one scheduled for completion in 2012.

The research was limited to Ghana and the Bui dam, due to limitations such as time and money. Thus the study of the Bui dam may not be enough to draw an overall conclusion for what is going on regarding the Chinese involvement in development in Africa in the 21st century, but it will help in better understand the shot-gun marriage between China and Africa and how risky developments projects in Sub Saharan Africa are being tackled by the Chinese.

My research employed the use of quantitative and qualitative data analysis. I conducted interviews with the engineers both on site at Bui and in the capital of Ghana-Accra, where the headquarters of Bui Power Authority (BPA) is located. While on site I had the opportunity to visit some of the relocated settlements and interviewed the residents. And because the projects is still ongoing, with the rock blasting and river diversion underway before I left the site for the United States, secondary data such as Environmental Impact Assessment (EIA), Social Surveys,

Feasibility Study, News paper reports and Engineering drawings were used in most of the analysis. The refusal of some high-ranking stakeholders to directly participate in interviews and to release project documents such as turnkey contracts between China and Ghana (largely due to lack of information sharing by the two countries with its ordinary citizens), it was impossible to properly review certain financial and technical aspects of the project.

## Chapter Two

## The Akosombo Dam

The history of dams and their correlation to the destruction of lives and properties has been well documented from the Narmada dam project in India to the Three Gorges dam in China. The Akosombo dam is no exception of the above assertion. The construction of the Akosombo dam in the 1960s on the Volta River resulted in the creation of the world's largest man-made lake.[14] Dams do not only dislocate homes and livelihood of mainly rural and tribal people, they also devastate the environment, submerge forest with their fauna and flora; give rise to other ecological and health consequences.[15] The continuous criticism of the benefits and cost of dams in both the short and long run in terms of silting that reduces the lifespan of dams and their negative environmental impacts, forced the Thai government to stop plans in to construct the Nam Choan Dam.[16] Unfortunately Ghana's learnt lesson from the negative impact of the Construction of the Akosombo hydroelectric dam in 1965 did not stop the government to embark on the construction of another mega hydroelectric dam in Bui on the Black Volta in 2008. Ghana's River Volta waters spring from no less than 6 West African countries, and almost two thirds of its 150,000 square mile basin is outside of Ghana – in Upper Volta, Togo, Dahomey, Ivory Coast and Mali.[17] But its 61,000 square miles lying

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[14] See James Moxon (1969) Volta: Man's Greatest Lake.
[15] See Claude Alvares and Ramesh Billorey (1998) Damming the Narmada: India's Greatest Environmental Disaster. The World Network.
[16] See Claude Alvares and Ramesh Billorey (1998) Damming the Narmada: India's Greatest Environmental Disaster. The World Network.
[17] See James Moxon (1969) Volta: Man's Greatest Lake.

within Ghana is formed by water flowing from tributaries of the White, Red and Black Volta.[18] The unique nature of the Volta River, with it 2 gorges located in Akosombo on the Volta River and Bui on the Black Volta, made it possible for the construction of dams at these two separate gorges.

During the colonial days, Sir Albert Kitson a geologist who first discovered bauxite in Ghana – in an effort to generate power to supply aluminum melting companies noted the future of the Akosombo dam. The Indian born and Australian educated Geologist known as Kiston did not only discover the possibility of building a dam at Akosombo on April 24, 1915, whilst on a canoe voyage down the Volta river he also pointed out the suitability of constructing another dam on the Black Volta. The above discovery of Sir Kinston and the establishment of the British Kaiser Aluminum Companies was the beginning of the Akosombo dam construction in Ghana.

The major players in the planning and implementation of the Volta River Project (VRP) were President Kwame Nkrumah, President John Kennedy, Edgar F. Kaiser, the World Bank and Prime Minister Harold Macmillan of Britain.[19] The British government's main reason for playing a marginal role in the Volta River Project was

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[18] See James Moxon (1969) Volta: Man's Greatest Lake.
[19] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.

due to economical gains that would benefit the Commonwealth of Britain.[20] The British were interested in securing cheap aluminum prices to be produced in Ghana by the electricity generated from the Akosombo hydroelectric dam, since at that time 4/5 of United Kingdom's aluminum came from dollar sources and thus a shift to colonial or "soft currency" sources would be beneficial to the UK.[21] But by the time the Volta River Project (VRP) report was completed and published in 1956; the British government and its aluminum companies had lost interest in the project due to the increased supply in world aluminum, which matched demand.[22]

The UK government's lost of interest grounded the project until the US government and businesses resurrected it, but the UK continued to be a player even though it had officially withdrawn.[23] The UK government's role was to advice the US government when it had concerns about Kwame Nkrumah's anti-American stance and had to decide whether to support the project.[24] It has been argued by Hart that, the US government's involvement in the Volta River Project was both political and economical, since the US was seeking to increase its influence in Africa as part of its cold war consideration and also expand the market for its goods, services and

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[20] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[21] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[22] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[23] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[24] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.

companies.[25] The United States almost pulled out of the project due to Nkrumah's unreliability as an American ally, but Kaiser's strong interest resulted in US continuation of the project.[26]

In 1960 the Ghanaian government requested the World Bank to appraise the project, as a process of finding additional financial support for the project.[27] As a result, the World Bank was prepared to make the first largest loan in the history of Africa to a single project. The Bank started acting as the major negotiator between the Aluminum companies and Ghanaian government through the process.
"New nations, such as ours, which are determined by every possible means to catch up in industrial strength, must have electricity in abundance before they can expect any large-scale industrial advance. Electricity is the basis for industrialization. That, basically, is the justification for the Volta river project (Nkrumah K: 1961)."

Industrialization fashion in the 1960s was regarded as the cornerstone to economic development in many postcolonial agricultural regimes of Africa. Kwame Nkrumah's post independence agenda hence, was to modernize every sector of the economy through structural transformation by state-led import substitution industries,

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[25] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[26] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[27] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.

mechanized agriculture and expansion of formal education to supply skilled labor.[28] With the identification of hydroelectric power as a key to industrialization, the Nkrumah government sought for funds to build the Akosombo dam on the Volta River, even though the proposal for the dam was inherited from the colonial period.[29] Kwame Nkrumah's goals of industrialization approached the development of the dam with the assumption that all citizens of Ghana will benefit equally. The above situation ignored the burgeoning class, rural-urban and the north-south dichotomies in Ghanaian society and the situation that those who would benefit from the VRP would not be the same as those who would be adversely affected.[30]

In 1961, the government of Ghana passed the Volta River Development Act of 1961 - Act 46 to establish the Volta River Authority (VRA) as the statutory corporation to oversee the construction of the dam and generation of electricity. Since then the VRA has overseen every dam construction project in the country including the Kpong and Bui dam, which is currently under construction. In the same year an Italian consortium called *Impregilo* was awarded the contract to build the Akosombo dam, the project started in 1961 and was completed in 1965 and commissioned in 1966.

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[28] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[29] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[30] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.

The construction of the Akosombo dam resulted in the creation of the largest man made lake-the Volta Lake. It inundated the villages, farmlands, sacred groves and other religious grounds, burial sites and public institutions such as roads, health centers, markets and schools of 80,000 people.[31] The failure of the government to establish a separate institution with the resources and mandate to address the problems of dam affected communities left the VRA with this task, for which it was ill equipped.[32] Compensation was to be paid to two kinds of landowners; those whose two million acres (80,000 hectares) of land were submerged, and those who owned the 430,000 acres (172, 000 hectares) required for resettlement townships and agriculture, but as at 2003 these compensation cases were still pending.[33]

The heavy impact of the Akosombo dam project on the surrounding communities and the lack of human and technical capacity within VRA resulted in the establishment of a Preparatory Commission tasked to prepare a report on communities to be affected by the Akosombo dam and how the issue should be approached. The commission recommended further study on a wide range of issues including the dam's impact on affected communities, and the recommendation was to be implemented by the Volta Basin Research Project (VBRP), which was

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[31] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[32] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[33] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.

established in 1963.[34] The VBRP struggled to catch up with the pace of the project because of the time it was established; hence it could no implement the research agenda set for it by the Preparatory Commission.

In spite of the challenges above, both the Preparatory Commission and the VBRP had to make some predictions about the impacts of the Akosombo dam and the Volta Lake on the local communities, their approach to the projects costs and benefits, especially in relation to affected communities had a number interconnected elements.[35] These included:

- Caution in the calculation of loses through downplaying both the existing value of the resources in question as well as the likely negative impacts on the dam;
- Pointing out mitigating or beneficial effects and making recommendations to realize and strengthen benefits, e.g. fish losses downstream being matched against fish gains around the Lake, and measures proposed to realize fully the fisheries potential of the Lake;
- Suggesting measures to repair or reduce any anticipated damage to resources, e.g. dredging of creeks;

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[34] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[35] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.

- And if all else failed, compensation.[36]

The Preparatory Commission concluded that local effects of the dam and Lake could be addressed satisfactorily, and identified the main effects of the dam as, 3,500 sq. miles to be flooded, changes in pattern of the flow of the river from the dam to the sea, problems of health and sanitation on the new Lake, the effects on agriculture, forests and fisheries and the changed conditions of the Lower Volta.[37] In addition, the report made an explicit assumption that the government would set up administrative machinery to address the above issues, just like how the Bui Power Authority (BPA) was set up by the government to address any issues related to the Bui dam. However, the above recommendations never materialized and VRA ended up taking the task to run both the Akosombo dam construction and handle the ramification issues caused by the dam as well, resulting in some residents not being able to receive their compensation to date.

Given the above brief case study on the Akosombo dam, should one expect the Ghanaian government to tackle the Bui dam project from more sustainable and strategic angle? Did the Ghanaian government learn a lesson from the ramifications caused by the Aksombo dam? If they did learn lessons, how are they using the lessons learned to effectively engage in the construction of the Bui dam project? Did the government of Ghana ever set up an Akosombo Review Committee after the

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[36] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.
[37] See Dodzi Tsikata (2006) Living in the Shadows of Large Dam: Long Term Responses of Downstream and Lakeside Communities of Ghana's Volta River Project.

construction, to evaluate the entire project and submit reports? If the government did not set up any Review Committee, then how did it learn any lessons from the Akosombo project? How far has Ghana as country come in terms of power generation in 2008? How different will the Chinese approach construction of the Bui dam, compared to how the World Bank, British and US approached the construction of the Akosombo dam. In an attempt to answer the questions above, I will analyze the Bui dam project, which is currently under construction in Ghana and other dam projects in the world and try to find out how different or similar a Western or Southern involvement in dam construction impacts the lives of poor and indigenous people.

## Chapter Three

## Ghana- China Relations and the Bui Dam Project

The desperation of the African continent to develop has resulted in a lot of romantic marriages between the African countries and its foreign counterparts over the years. In recent times, the new development that is unfolding on the African continent, is the relationship between individual African countries and their Asian partner, the Chinese. *"A growing country looking for markets and influence meets a continent with plenty of resources but few investors. Now that China has moved in, though, its African partners are beginning to resent their aggressive new patron" (Serge Michel, Foreign Policy May/June 2008).* In Brazzaville, everything new appears to have come from China: the stadium, the airport, the televisions, the roads, the apartment buildings, the fake Nikes, the telephones and even the aphrodisiacs (Serge Michel, May/June 2008). Kids playing ball in the street of the Congolese capital yell "ni hao ni hao" meaning hello in Chinese to every foreigner, as if all foreigners are Chinese.

The Congolese minister for housing and construction, Claude Alphonse N'Silou knows more about the Chinese reach in Congo than anybody (Serge Michel, May/June 2008). In fact, he boasted in an interview with Serge Michel about how the Chinese built the Alphonse Massamba Stadium, the foreign ministry, the television company's headquarters and how they are now building a dam in Imboulou and he claims it is a win-win situation for both sides and too bad for the West. Between 2000-2007, trade between China and Africa has jumped from $10

billion to $70 billion, with China surpassing the UK and France to become the continents 2nd trading partner after the US, and likely to overtake the US by 2010 (Serge Michel, May/June 2008).

The Chinese government's main source of foreign investment funds, the Export-Import Bank of China is planning to spend $20 billion in Africa in the next 3 years- roughly equal to the amount the entire World Bank expects to Spend in Africa the same period (Serge Michel, 2008). This form of partnership results in a purely win-loss situation for Africa, with the Chinese gaining access and control over oil, copper, uranium, cocoa, cobalt and wood that will fuel its booming industrial revolution back home, and Africa sees the completion of schools, roads and other key development it desperately needs (Serge Michel, 2008), without thinking about the long-term consequences. The above situation is only the beginning of another paradigm of the colonization discourse. The Chinese are investing in the construction of the Bui dam in Ghana, in exchange for Ghana's main cash crop export known as the cocoa beans (Francis Kokutse, Allafrica.com December, 19 2007). Cocoa beans are used to make chocolate products, cookies, candy etc. Hence its use as part payment for the Bui dam project would boost the production of Chinese cocoa beans related products, since there will be no need for them to compete for the cocoa beans on the world market at international prices.

China is beginning to run into same obstacles the West faced for years, and if China is just another mortal investor, subject to the same problems, inefficiencies and frustrations that every other global power has faced in Africa, it means the Chinese

miracle for Africa is nothing more than another lost opportunity (Serge Michel, May/June 2008). According to Huang Zequan, vice chairman of the Chinese-African Friendship Association, an estimated 550,000 Chinese nationals live in Africa, compared to 70,000 Americans and 100,000 French citizens. Some were sent by Beijing to build dams, roads and railroads, while others hope to get rich in some of the poorest countries on the planet.

My thesis' main objective is to analyze the recent $1 billion contract signed between the Government of Ghana and the Export Import Bank of China for Sino Hydro a Chinese company to build the Bui Hydroelectric in Ghana from 2007 to 2012. The entire Bui dam project is being designed, constructed and financed solely by the Chinese without any other private international finance, hence the need to study how the above relationship will impact Ghana's development agenda and the Chinese motive behind this recent development relationship with Sub Saharan Africa.

### 3.1 The Bui Dam Hydroelectric Project and the Black Volta

In 1961 during the construction of the controversial Akosombo hydroelectric dam, resulted in the creation of the biggest manmade lake in the world. There were a lot of sustainability issues surrounding the supposed Akosombo dam that was supposed to help Ghana achieve its industrialization status. In 2006 the Volta River Authority (VRA) and Electricity Company of Ghana (ECG) between August 28, 2006 and 2008, was forced to introduce a National Load Management Program to ration

power in the entire country, due to inadequate energy production by the Akosombo dam as result of the low water inflows into the Volta Lake and siltation.

In 2007, in an effort to permanently tackle the insufficient power problem in the country, the government embarked on the construction of a new hydroelectric dam project at Bui and the energy minister was quoted saying "*I am overjoyed today, to have this opportunity to participate in this mornings function; a function that symbolizes the beginning of the realization of a dream.*"[38] The Bui hydroelectric dam project is located on the Black Volta River at the Bui Gorge in northwestern Ghana, as shown with an arrow marked with the words "project site" on the Ghana map in figure 3.0 below. The project site is located on the Black Volta River at the Border of Bole (Northern Region) and Wenchi (Brong-Ahafo Region) districts in northwestern Ghana, approximately 150 kilometers (km) upstream of Lake Volta. Portions of the project fall within Bui National Park and all components of the project lie entirely in Ghana.[39]

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[38] Remarks by Hon. Joseph Kofi Adda, Ghana's minister of energy at the Bui dam sod cutting ceremony on August 24, 2007.

[39] (2006). Environmental and Social Management Plan for the Bui Hydropower Project. Environmental Resources Management. ERM.

Figure 3.0


NIGER
BURKINA FASO
Tamale
Project Site
BENIN
GHANA
TOGO
IVORY COAST
Kumasi
Cotonou
Accra
Atlantic Ocean
Atlantic Ocean
MOROCCO
ALGERIA
LIBYA
MAURITANIA
MALI
NIGER
CHAD
BURKINA FASO
GUINEA
BENIN
NIGERIA
LIBERIA
GHANA
IVORY COAST
CAMEROON
GABON
CONGO
ANGOLA
Atlantic Ocean
N
W
E
S
0
100
Kilometres
KEY:
Cities
Major Rivers
Roads
Railway
Administrative Boundary
International Boundary
CLIENT:
Ministry of Energy/Bui Development Committee
SIZE:
A4
TITLE:
Figure 2.1
Location of the Bui Project
ERM
8 Cavendish Square
London
W1G 0ER
Tel: 020 7465 7200
Fax: 020 7465 7272
ERM
Source: Geography Network
DATE: 19/05/06
CHECKED: DZS
PROJECT: 0042911
DRAWN: KM
APPROVED: EB
SCALE: scale bar
DRAWING No.
Overview_location.mxd
REV.
0

The Black Volta originates from Burkina Faso and flows approximately 1,350 kilometers south creating the western border of Ghana with both Burkina Faso and Ivory Coast, then combining with the White Volta River and flowing into Lake Volta in Southeastern Ghana.[40] Existing hydroelectric facilities on the Black Volta River includes Akosombo and Kpong hydroelectric projects, located approximately 150 km downstream and southeast of the Bui Project.

Currently, the primary sources of electricity generation in Ghana are hydropower, thermal power and imported fossil fuel. Ghana's existing installed electricity capacity is 1,760 megawatts (MW); of which 1,180 MW are from hydroelectricity sources and 550 MW are from thermal plants. In addition to the above sources, there is a 30 MW diesel plant at Tema, currently operated only as a contingency.[41] The Akosombo and the Kpong dams in southeastern Ghana currently generate 67 percent of Ghana's electrical power, with the country also relying on imports from Cote d'Ivoire to supplement domestic supply during peak hours. According to the 2002 Census report, roughly 43 percent of the national population has access to electricity, and over 80 percent of the domestic electricity supply is consumed in Ghana's cities and urban towns.[42] Table 3.0 below shows Ghana's plants and respective electricity capacities.

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[40] (2006). Environmental and Social Management Plan for the Bui Hydropower Project. Environmental Resources Management. ERM.

[41] See Energy Commission of Ghana, 2006, Energy Supply to the Economy – Electricity, Strategic National Energy Plan, 2006-2020, Volume II, Part 1.

[42] (2006). Environmental and Social Management Plan for the Bui Hydropower Project. Environmental Resources Management. ERM.

**Table 3.0 total electricity and plant capacities in Ghana**

| NAME OF PLANT | INSTALLED CAPACITY |
|---|---|
| Akosombo Hydro Plant | 1020 |
| Kpong Hydro Plant | 160 |
| Total Hydro Plant | 1180 (67% of total) |
| Aboadze Thermal Plant | 550 |
| Tema Diesel Plant | 30 |
| Total Thermal/Diesel | 580 (33% of total) |
| TOTAL | 1760 |

Source: Electricity Sector Overview (Energy Commission of Ghana, 2006)

Long-term energy forecasts indicate that Ghana needs 100 MW of additional capacity every two years,[43] a projection that has resulted in plans to construct the Bui dam. Sir Albert Kingston, an Indian-born-Australian educated geologist who happened to discover the Akosombo gorge on April 24, 1915 while he was on a canoe voyage down the Volta River and the Black Volta River, also discovered the Bui gorge.[44] The above gorge was targeted for the construction of the Bui hydroelectric dam in 2007, by the government of Ghana.

### 3.2 Land Law and Land Use Rights in Ghana

The state, a stool (a skin), a clan, a family, an individual (including a corporate body) or a group of individuals are the owners of Ghana's Land. The stool referred to as such among most of the Akan ethnic groups in the southern Ghana) or skin (used among the ethnic groups in Northern Ghana) constitutes the sovereign authority of traditional areas in Ghana. Stool or skin lands were traditionally acquired by

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[43] (2006). Environmental and Social Management Plan for the Bui Hydropower Project. Environmental Resources Management. ERM.

[44] See James Moxon (1969) Volta: Man's Greatest Lake.

conquest of previously occupied lands or by original occupation or settlement of virgin land. Under the 1992 constitution of Ghana[45], "All Stool lands in Ghana shall vest in the appropriate Stool on behalf of and in trust for the subject of the stool". Clans and families typically acquire land by occupation or by gift. Individuals acquire land by occupation as subjects of stools, members of clans or families, by purchase or by gifts, while corporate bodies mostly by purchase and sometimes by gift.[46] The state on the other hand acquires land, compulsorily for public purposes or in the interest of the public.[47]

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[45] Article 267(1), of the 1992 Ghana constitution.

[46] (2006). Environmental and Social Management Plan for the Bui Hydropower Project. Environmental Resources Management. ERM.

[47] Article 20 (1) of the 1992 constitution provides that: no property of any description, or interest in or right over any property shall be compulsorily taken possession of or acquired by the state unless the following conditions are satisfied: -

(i) The taking of possession or acquisition is necessary in the interest of defense, public safety, public order, public morality, public health, town and country planning or the development or utilization or property in such a manner as to promote the public benefit; and

(ii) The necessity for the acquisition is clearly stated and is such as to provide reasonable justification for causing any hardship that may result to any person who has an interest in or right over the property.

Article 20 (2) states that compulsory acquisition of property by the state shall only be made under law which makes provision for: -

(i) The prompt payment of fair and adequate compensation; and

(ii) A right of access to the high court by any person who has an interest in or right over the property whether direct or on appeal from any other authority, for the determination of his interest or right and the amount of compensation to which he is entitled.

Article 20 (3) of the 1992 constitution provides that where a compulsory acquisition or possession of land effected by the state in accordance with article 20 (1) of this article involves displacement of any inhabitants, the state shall resettle the displaced inhabitants on suitable alternative land with due regard for their economic well-being and social and cultural values. The constitution further provides that any property compulsorily taken possession of or acquired in the public interest or for a public purpose shall be used only in the interest or for the purpose for which it was acquired.

### 3.3 Customary Land Ownership in the Bui Dam Area

The Bui Dam project area is mostly located within the Brong Ahafo and Northern Regions of Ghana, and fall within the Mo traditional area and includes several skins, among them the Bamboi, Talisma, and Carpenter etc. Members of the land-owning skins and families have customary freehold[48], while migrants and other non-members of the land owning skins and families access land through the various traditional methods such as renting and share cropping.[49]

The actual dam area lies within the Bui National Park, which was declared a reserve and vested in the state pursuant to the Wildlife Reserve Regulations of 1971 (L.I 701 of 1971). The Bui National Park constitution did not make any provision for the payment of compensation when the land was acquired for the park. However, in order for the dam to be constructed, the land will have to be re-acquired to ensure the prompt compensation payment.

In order to avoid repeating the mistakes made by the Volta River Authority (VRA)[50] resettlement schemes in the Volta Lake, where occupiers were not granted any defined property rights, the Bui Power Authority (BPA)[51] involved the Lands

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[48] Families with customary freehold are the original owners of the land forever.

[49] (2006). Environmental and Social Management Plan for the Bui Hydropower Project. Environmental Resources Management. ERM.

[50] The government of Ghana through Act 46 of the Volta River Development Act in 1961 established the Volta River Authority (VRA). Act 46 established VRA as the statutory corporation to oversee the construction of the Akosombo dam and generation of electricity. The VRA also oversaw the construction of the Kpong dam.

[51] The President of Ghana established Bui Power Authority (BPA), in 2008, to oversee the construction and generation of electricity at Bui.

Commission and the Lands Valuation Board in the planning and development of the resettlement locations. The Lands Commission will register and grant proper titles to the occupiers, and the Lands Valuation Board will undertake the valuation of properties within the area to enable payment of compensation to those who will be displaced by the Bui dam project.

### 3.4 Demography of Bui Dam Area

The area to be affected by the Bui dam projects comprises of approximately 2000 people living in small villages scattered all over the dam area,[52] the villages are all located in the Tain district and Bole Districts of Ghana. They are Bator, Bui village, Dam site village, Dokoyina, Agbegikuro, Brewohodi, Lucene/Loga, Agbelikame South Agbelikame North, Banda Ahenkro, Gyama, Banda Nkwanta, New Longoro, Carpenter, Teselima, Bamboi, Bongasi, Saaman, Kwame Kwesi Wasipe, Alfred Village, Tainaboi, Dodovi, Mempeasem and Tina. Out of the total affected villages, seven will require physical resettlement due to inundation from the dam. The above seven villages have a total population of 869 residents in 168 households, while four other villages will lose land only.[53] Table 3.1 below shows villages in the Bui dam project area.

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[52] Remarks by Hon. Joseph Kofi Adda, Ghana's minister of energy at the Bui dam sod cutting ceremony on August 24, 2007.

[53] (2006). Environmental and Social Management Plan for the Bui Hydropower Project. Environmental Resources Management. ERM.

**Table 3.1 villages in the project area**

| Tain District | Bole District |
|---|---|
| ***Villages that will be inundated or isolated by the dam*** | |
| Bator | Lucene/Loga |
| Bui | Agbegikro |
| Dam Site | |
| Brewohodi | |
| Dokokyina | |
| ***Villages that will lose some of their farmland due to inundation*** | |
| Bongase | Gyama |
| Banda Ahenkro | Banda Nkwanta |
| ***Villages along the proposed transmission line or roads to be upgraded*** | |
| | New Longoro |
| | Carpenter |
| | Teselima |
| | Bamboi |
| | Gyama[54] |
| ***Downstream Villages that are likely to be affected by changed river flows*** | |
| Agbelikame South | Agbelikame North |
| Abofoakure/Ahomansia | Alfred Village |
| Obaa Akurase | Tainaboi |
| | Mempeasem |
| | Dodovi |

Source: Environmental Resource Management

Resettlement portends to be complicated, as the villages are made up of a mixture of populations that migrated from both north and south of Ghana to settle in the area,

[54] Gyama will experience both inundations of farmland as well as impacts from road upgrade and transmission lines.

The villages are made up of a variety of ethnic groups and religions, the education level in the area is very low and majority of residents are present all year round, though 53 villagers reported they are absent at least three months each year.[55] Majority of the households in the area engage in farming and fishing as their primary source of occupation. All the households in Dam site village rely on the majority of their crop for subsistence purposes as well as their livestock, suggesting that these households are very reliant on farmland (for crops and grazing) for supply of food. Table 3.2 below shows household population of villages in the Bui dam area and the level of impact that the dam project will have on each village

**Table 3.2 village population and household numbers**

| Village | Population | Number of Households | Average number of people per household |
|---|---|---|---|
| ***Villages that will be inundated or isolated by the dam*** | | | |
| Bator | 670 | 45 | 15 |
| Bui | 350 | 40 | 9 |
| Dam Site | 42 | 5 | 8 |
| Brewohodi | 64 | 15 | 4 |
| Dokokyina | 350 | 55 | 6 |
| Lucene/Loga | 44 | 6 | 7 |
| Agbegikro | 190 | 16 | 12 |
| ***Villages that will lose some of their farmland due to inundation*** | | | |
| Bongase | 2000 | 347 | 6 |
| Banda Ahenkro | 4000 | Unknown | Unknown |
| Gyama | 1500 | 154 | 10 |
| Banda Nkwanta | 2,096 | 259 | 8 |

[55] (2006). Environmental and Social Management Plan for the Bui Hydropower Project. Environmental Resources Management. ERM.

| Village | Population | Number of Households | Average number of people per household |
|---|---|---|---|
| Kwame Kwesi | 351 | 40 | 9 |
| Wasipe | 300 | 20 | 15 |
| ***Villages along the proposed transmission line or roads to be upgraded*** | | | |
| New Longoro | N/A | N/A | N/A |
| Carpenter | N/A | N/A | N/A |
| Teselima | 1000* | N/A | N/A |
| Bamboi | 13,000* | N/A | N/A |
| Gyama | 1500 | 154 | 10 |
| ***Downstream villages that are likely to be affected by changed river flows*** | | | |
| Agbelikame (South) | 209 | 26 | 8 |
| Abofoakure/ Ahomansia | 115 | 28 | 4 |
| Obaa Akurase | 34 | 7 | 5 |
| Agbelikame (North) | 702 | 70 | 10 |
| Alfred Village | 20* | N/A | N/A |
| Tainaboi | 205 | 11 | 19 |
| Mempeasem | 30 | 5 | 6 |
| Dodovi | 20* | N/A | N/A |

*=Estimated, Source Environment Resources Management

Fishing is used primarily for sale in the peak season and for subsistence in the lean season. In addition to fishing and farming, households engage in a variety of activities including tree cropping, livestock-rearing, hunting and gathering forest products to help supplement their core livelihood activities. The unemployment levels in Bui, Lucene and Agbegikuro are very high, meaning these people may face great difficulty in restoring their livelihoods when resettled. The non-existence of services such as electricity, water and sanitation infrastructure forces these

households to rely on wood and kerosene for energy and hand pumps or the river for drinking water. Infrastructure for treating both solid and liquid waste is not available in these areas, and households usually rely on pit latrines or KVIP[56] for their toilet needs. Table 3.3 below shows the villages that mostly rely on fishing as their occupation.

**Table 3.3 villages reliant on Fishing**

| Village | Proportion (of total income from fishing (%) | Proportion of fish that is consumed and sold (%) |
|---|---|---|
| Brewohodi | 80 | Consumed: 40<br>Sold: 60 |
| Dam Site | 66 | Consumed: 33<br>Sold: 66 |
| Abofoakura/Ahomansia (mix of farming) | 60 | Consumed: 20<br>Sold: 80 |
| Mempeasem<br>(Mix of farming) | 60 | Consumed 20<br>Sold: 80 |
| Agbelekame North<br>(Mix of farming) | Less than 40 (although used to be the major income source) | Consumed: 40<br>Sold: 60 |
| Agbegikro | 80 | Consumed: 20<br>Sold: 80 |

Source: Environmental Resources Management

Primary schools and healthcare facilities exist in some of the villages, but the infrastructure is very limited forcing most villagers to travel to larger neighboring

[56] The Kumasi Ventilated Improved Pit (KVIP) is an upgraded form of the pit latrine, introduced to help prevent the outbreak of epidemics such as cholera and diarrhea caused primary by pit latrines.

towns for these services. Households acquire lands by allocation from skins to build their houses, which are mostly made of earthen with straw or tin roofs. The plots vary in size, both within and between villages. Villagers have very few household appliances or means of transport, both indications of high levels of poverty.[57] Below in figure 3.1 is a picture of a typical housing unit in Agbegikuro village in the Bui dam area, and table 3.4 showing villages in the area with no schools.

**Table 3.4 villages in Bui dam area with no schools**

| | |
|---|---|
| • Dam Site;<br>• Brewohodi;<br>• Lucene;<br>• Agbegikuro;<br>• Abofoakure/Ahomansia; | • Obaa Akurase;<br>• Agbelikame North;<br>• Tainaboi; and<br>• Mempeasem. |

[57] (2006). Environmental and Social Management Plan for the Bui Hydropower Project. Environmental Resources Management. ERM.

**Figure 3.1 below is a resident of Agbegikuro standing in front of his house.**

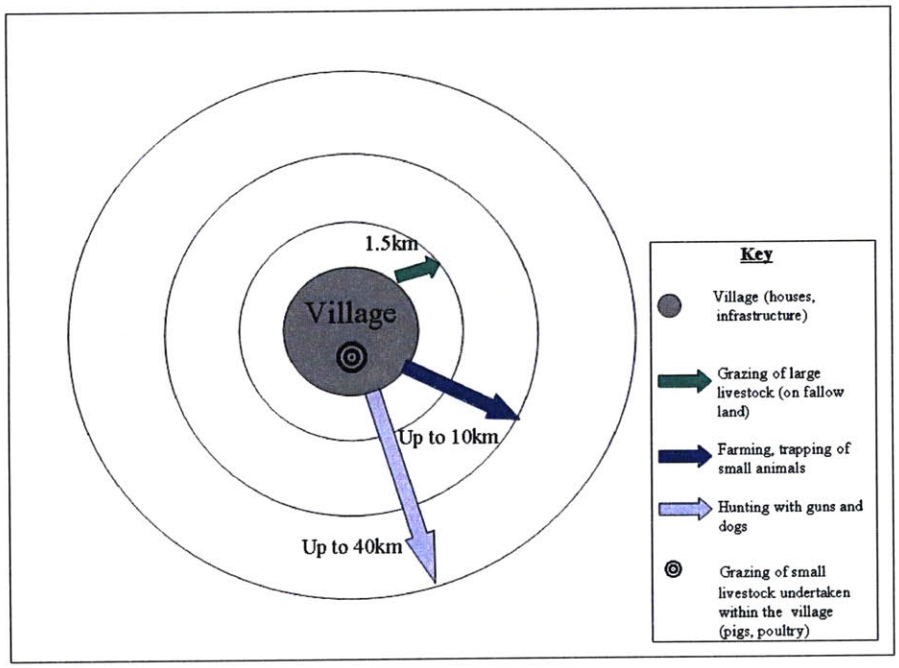
Income levels in Ghana vary according to regions, with people living in the capital making the highest annual income than the rest of the 10 regions in the country. Table 3.5 below shows the disparity in the mean annual household expenditure in the Brong Ahafo Region and the Greater Accra Region, with Brong Ahafo's mean annual household expenditure being 3,544,000 Ghana cedis and Accra's mean annual household expenditure being 6,777,000 Ghana cedis.

**Table 3.5 showing mean annual household and per capita expenditure and mean annual mean annual household and per capita income.**

| Region | Mean Annual Household Expenditure (cedis) | Mean Annual Per Capita Expenditure (cedis) | Mean Annual Household Income (cedis) | Mean Annual Per Capita Income (cedis) |
|---|---|---|---|---|
| Western | 4,677,000 | 995,000 | 2,671,000 | 568,000 |
| Central | 2,977,000 | 902,000 | 1,464,000 | 444,000 |
| Greater Accra | 6,777,000 | 1,883,000 | 3,356,000 | 932,000 |
| Volta | 4,000,000 | 851,000 | 2,055,000 | 415,000 |
| Eastern | 3,736,000 | 958,000 | 1,950,000 | 527,000 |
| Ashanti | 5,008,000 | 1,221,000 | 2,550,000 | 622,000 |
| ***Brong Ahafo*** | ***3,544,000*** | ***844,000*** | ***2,302,000*** | ***548,000*** |
| ***Northern*** | ***2,837,000*** | ***386,000*** | ***1,552,000*** | ***210,000*** |
| Upper West | 2,462,000 | 352,000 | 1,442,000 | 206,000 |
| Upper East | 1,793,000 | 399,000 | 1,446,000 | 321,000 |
| **National** | **4,244,000** | **987,000** | **2,267,000** | **527,000** |

Source: Ghana Living Standards Survey, Report of the Forth Round (GLASS4), Ghana Statistical Service, October 2000.

**Table 3.6 Showing typical land use around a village in the project area.**




## 3.5 Objectives

The most pressing question that arises in the discussion of the dam construction asks' "Why do governments insist on constructing dams, when it has been proven that dams more often than not result in the displacement of indigenous people and cause severe environmental problems?" The Narmada dam's displacement of 40% to 50 % tribal people in India alone since 1947 accounts for an estimated 33 million indigenous people who make up 8% of India's 1 billion population.[58] According to

[58] Rajagopal, B. (2008, August 8). The Violence of Development.

the Indian Institute of Urban Affairs-New Delhi, the entire Narmada Valley Project will lead to the eventual displacement of 1 million people, the majority of this population belonging to tribal communities that have been marginalized by mainstream development policies for decades.[59] Yet most governments back their plan to build hydroelectric dams with the economic argument that energy independence could lead to development. The title of my thesis is named after the recent romantic relation between China and other Sub Saharan African countries. The ongoing Bui dam in Ghana will help me conduct detailed research on the above topic.

Akosombo was financed and built using the World Bank standards, resulting in the disaster described above. Hence it is necessary to study how the Chinese approach dam construction different from that of the World Bank. The construction of the Bui dam project began in early 2008, making it the perfect project to answer the questions: "What standards are being used in the construction of the dam and why? Are the best planning practices being incorporated into the project?" The success and failure of the Three Gorges dam project depended largely on the success of the resettlement implementation, and both the Chinese Communist Party and the State Council considered resettlement to be a very important issue; hence they adopted the "Development Settlement Policy," approach. The new approach included lump sum reimbursement for lands lost to inundation, rural settlement, township and

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[59] See Claude Alvares and Ramesh Billorey (1998) Damming the Narmada: India's Greatest Environmental Disaster. The World Network.

factory relocation, personnel training and other issues pertinent to relocation.[60] According to Qing, pilot projects conducted showed that although it would be difficult, overall resettlement in the Three Gorges area was environmentally feasible. Given the lessons learned from the Three Gorges, will the Sino Hydro; a Chinese company ensures that the social ramifications of the Bui dam project are carefully and professionally resolved?

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[60] See Dia Qing (2006) The Dragon Has Come: The Three Gorges Dam and the Fate of China's Yangtze River and its People.

## Chapter Four

## Planning Process and Social and Environmental Safeguards

This chapter presents an overview of the Bui dam, analyzing the planning process adopted during the design stages of the project and the specific financial, technical and engineering details of the Bui project. The planning process will focus on analyzing the feasibility studies and social surveys undertaken by stakeholders involved in the project.

### 4.1 Bui Dam Contract

The Ministry of Energy and the Bui Development Secretariat (BDS), both of Ghana entered an agreement with China (the Export Import Bank of China and Sino Hydro) on behalf of Ghana to build a hydroelectric dam at Bui that would generate 400 megawatts (MW) of electricity for the country.[61] China committed to providing $1 billion in loans and grants towards the Bui Dam and other development projects in Ghana. The agreement was broken into seven different financial packages covering education, health, construction of the Bui dam, and areas of technical co-operation, which would be determined later by the two parties[62] Five out of the seven agreements were signed between the government of Ghana and the Chinese government and the remaining two signed between Exim Bank of China[63] and the government of Ghana. Institutions that will benefit from the assistance package are

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[61] See Ministry of Energy, Government of Ghana. www.energymin.gov.gh

[62] See Daily Graphic. Thursday September 4, 2008. No. 150453. www.graphicghana.com

[63] Exim - Export Import Bank of China.

the University of Ghana, the Ministry of Health, the Ministry of Energy, the Ministry of Defense and the Ministry of Finance and Economic Planning.

The Bui hydroelectric dam project is strategically important to the country because;

- It reduces the dependence of the country on the purchase of imported fuel to meet the power demand of the country.
- It stabilizes the load flow in the power system, especially in the northern part of the grid.
- It reduces transmission losses on the power consumption of the northern part of the country, presently supplied by production plants all located near the coast.
- It participates in the long-term economic development of the country.
- It improves the technical capacity of Ghana to supply power to our neighbors in Burkina Faso and Togo.

### 4.2 Technical and Engineering details of the Bui Dam

Coyne et Bellier a French company entered into an agreement with the Volta River Authority (VRA) to update the feasibility study conducted by SMEC in 1976[64] on the Bui Hydroelectric project on March 17, 1994. According to their report, the total annual energy production required in Ghana to meet increasing domestic and industrial loads will rise from 7,235 GWh to 11,953 GWh in 2020. In order to meet

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[64] Conducted by SMEC - Snowy Mountains Engineering Corporation of Australia, 1976.

the peak demand, the installed capacity of the generation system will need to increase from 1067 MW in 1997 to 1899 MW in 2020.[65]

The maximum generation capacity of the Bui dam is estimated to be 400MW with net average production of 994-gigawatt hours/year (GWh/yr). The power output from the Bui project will be primarily directed to the northern part of the national grid through existing substations in Wa, Sunyani and Bolgatanga, with the remaining power being transmitted to the southern grid. The Bui project will consist of one main dam and a powerhouse in the Bui gorge and two saddle dams[66] in the neighboring Banda hills, creating a reservoir that will extend about 40km upstream within the borders of Ghana.[67] Below in figure 4.0 shows details of the dam and its components.

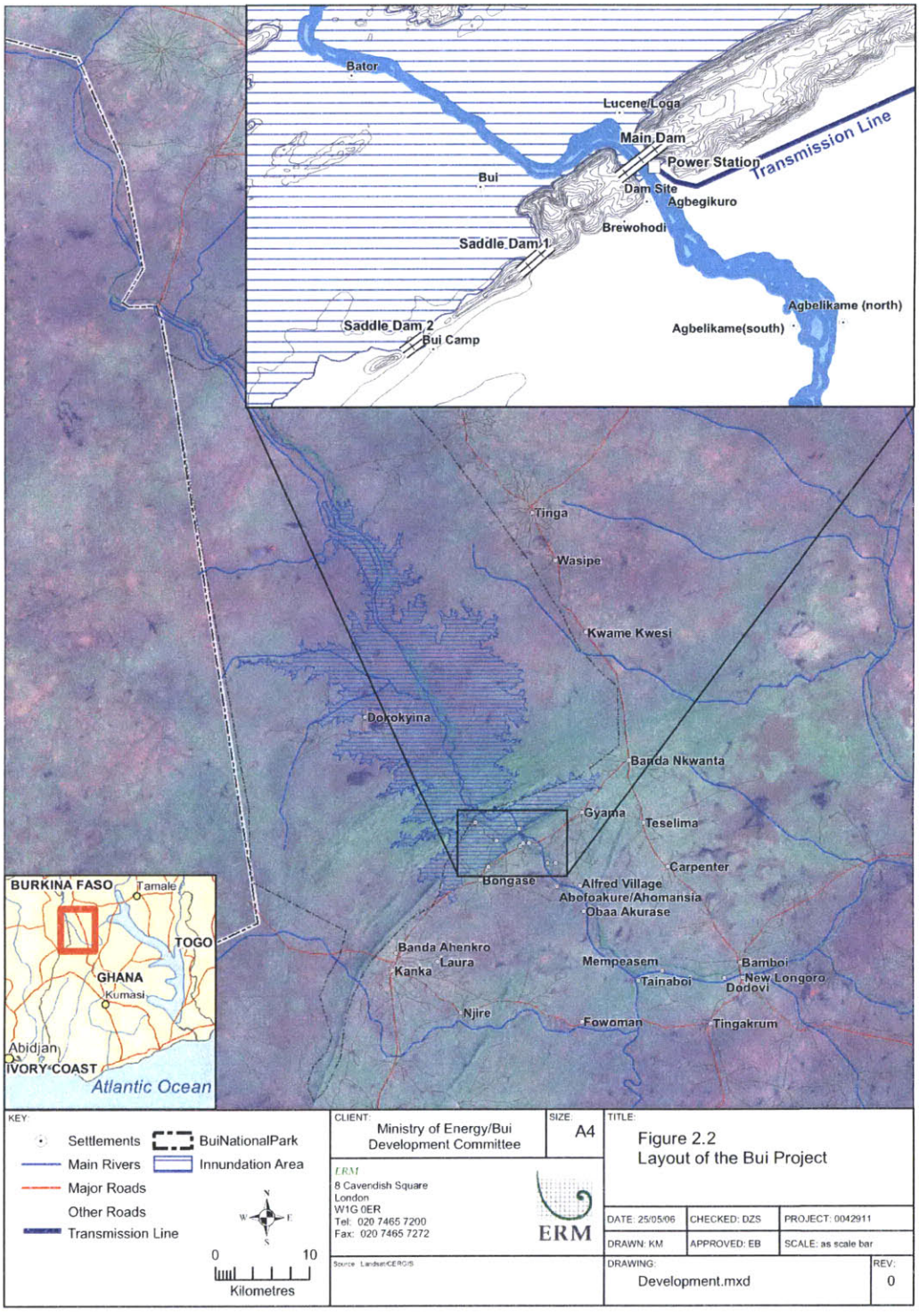
---

[65] Coyne et Bellier, February 1995, Bui Hydroelectric Development Feasibility Study Update

[66] Saddle dam is a dam constructed between topographic low points along the sides of a reservoir to prevent the reservoir from spilling out of the basin.

[67] See Environmental Resources Management (ERM), June 2006. www.erm.com

**Figure 4.0**


Bator
Lucene/Loga
Main Dam
Power Station
Transmission Line
Bui
Dam Site
Agbegikuro
Brewohodi
Saddle Dam 1
Agbelikame (north)
Saddle Dam 2
Bui Camp
Agbelikame(south)
Tinga
Wasipe
Kwame Kwesi
Dokokyina
Banda Nkwanta
Gyama
Teselima
Carpenter
Bongase
Alfred Village
Abofoakure/Ahomansia
Obaa Akurase
Banda Ahenkro
Laura
Kanka
Mempeasem
Bamboi
Tainaboi
New Longoro
Dodovi
Njire
Fowoman
Tingakrum
BURKINA FASO
Tamale
TOGO
GHANA
Kumasi
Abidjan
IVORY COAST
Atlantic Ocean
KEY:
Settlements
Main Rivers
Major Roads
Other Roads
Transmission Line
BuiNationalPark
Innundation Area
N
W
E
S
0
10
Kilometres
CLIENT:
Ministry of Energy/Bui Development Committee
SIZE:
A4
TITLE:
Figure 2.2
Layout of the Bui Project
ERM
8 Cavendish Square
London
W1G 0ER
Tel: 020 7465 7200
Fax: 020 7465 7272
ERM
DATE: 25/05/06
CHECKED: DZS
PROJECT: 0042911
DRAWN: KM
APPROVED: EB
SCALE: as scale bar
Source: Landsat/CERGIS
DRAWING:
Development.mxd
REV:
0

The Dam will consist of the following:

- The main dam located in Bui gorge will be a gravity roller compacted concrete (RCC)[68] dam, and its maximum height will be 110m above the foundation level or 90m above ground level. The crest[69] of the dam used to prevent spillage over the top of the dam caused by waves or rising reservoir levels during floods will have a height of 185 m National Level Datum (NLD)[70] and a total crest length of 470m. Incorporated in the design is an emergency spillway and water intake to regulate and control flow of upstream and downstream of the dam.
- The two saddle dams will be located at the low points along the Banda hills southwest of the main dam to contain the reservoir. The first saddle dam will be located along the right bank of the river 500m from the main dam at a height of 37m AGL[71] and a crest height of 187m NDL. The second saddle dam will be located on the right of the riverbank about 1km from the main dam north of Bui Camp at a height of 7m AGL. Both saddle dams will be constructed of rock fill material with a vertical drain on the downstream side and an out let at the toe of the dam.[72]

---

[68] Roller Compacted Concrete or RCC – A drier-than-typical concrete mix applied with high-density paving equipment and compressed with rollers.

[69] Crest height and length – Dam crest consist of a freeboard and parapet wall on the upstream side of the dam, crest height is the maximum height if thee top arc if the dam and crest length is the linear distance across the top arc of the dam.

[70] NLD can be referred to as mean sea level. The ground level at the main dam site is approximately 96 National Level Datum (NLD).

[71] AGL – Means above ground level.

[72] Toe of the dam – The lowest point of the dam.

- The reservoir will have a Full Supply Level (FSL or Maximum Operating Level) of 183 NLD. At FSL the reservoir will have a surface area of approximately 440 square km, extending 40km upstream and inundating 21% of the Bui National Park, and will store 12.35 million cubic meters of water with an average depth of 29m. The Minimum operating level (MinOL) of the reservoir will be 167 NLD, with a reservoir total surface area of 288 square km and total volume of 6,600 million cubic meters. The maximum level of the reservoir during flood would be 183.7m NLD (i.e. 0.7m above the FSL).
- An indoor powerhouse made of concrete will be constructed along the left bank of the river, approximately 20m downstream, containing three 133.MW vertical shafts Francis-type turbines with a maximum power generation capacity of 400MW.
- Three 161 kilovolts (kv) transmission lines will connect the Bui power project with the national grid.[73]

Table 4.0 and 4.1 below shows the mean monthly inflows and projected average water levels in the Bui reservoir respectively, and figure 4.1 and table 4.2 showing the detailed technical design of the dam.

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[73] See Environmental Resources Management (ERM), June 2006. www.erm.com

## Table 4.0 Monthly Mean Flows at Bui

| Month | Natural Flow $m^3/s$ | Regulated Flow $m^3/s$ (1) | Percent Difference, % |
|---|---|---|---|
| Jan | 29.6 | 190.4 | +543 |
| Feb | 13.7 | 187.6 | +1268 |
| **Mar** | **8.5** | **172.7** | **+1928** |
| Apr | 9.7 | 168.8 | +1648 |
| May | 26.9 | 160.0 | +495 |
| June | 75.0 | 155.9 | +108 |
| July | 175.8 | 158.5 | -10 |
| Aug | 394.6 | 155.1 | -61 |
| **Sep** | **849.8** | **221.9** | **-74** |
| Oct | 649.5 | 310.4 | -52 |
| Nov | 189.6 | 289.8 | +53 |
| Dec | 70.2 | 242.8 | +246 |

(1) Excluding spillway discharges during extreme flow events

## Table 4.1 showing simulated average water levels in the Bui reservoir

| Month | Reservoir level |
|---|---|
| **Jan** | 176.01 |
| **Feb** | 174.57 |
| **Mar** | 173.24 |
| **Apr** | 172.02 |
| **May** | 171.07 |
| **Jun** | 170.53 |
| **Jul** | 170.69 |
| **Aug** | 172.51 |
| **Sep** | 177.03 |
| **Oct** | 179.24 |
| **Nov** | 178.53 |
| **Dec** | 177.31 |
| **57 year minimum annual range** | 2.88 |
| **57 year average annual range** | 10.19 |
| **57 year maximum annual range** | 15.78 |

Source: Environmental Resources Management.

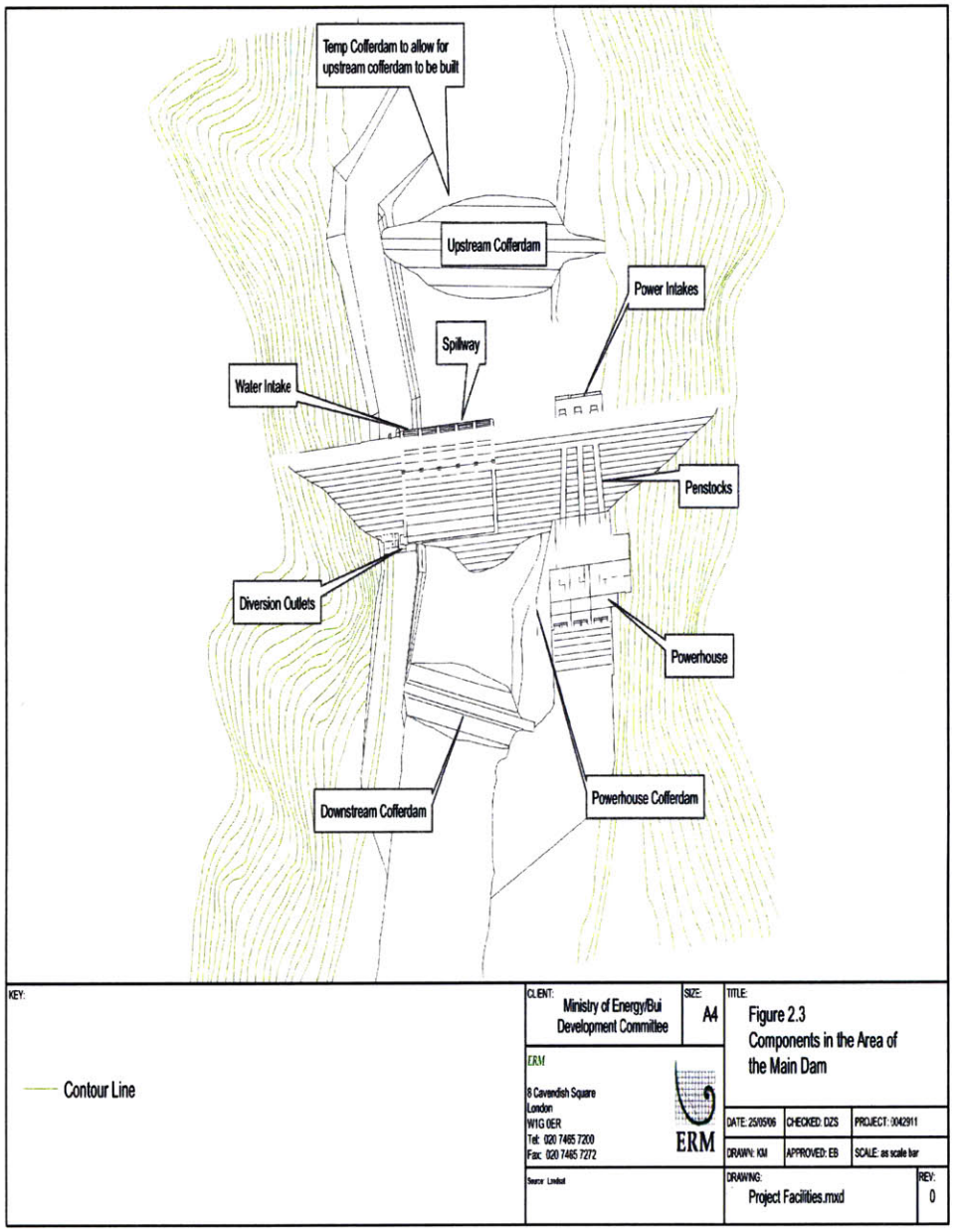
## Table 4.2 technical details of the Bui dam project

| PROJECT FACILITY | DESCRIPTION |
|---|---|
| MAIN DAM | |
| Dam Type | Gravity dam made of roller compacted concrete |
| Location | Bui Gorge, 150 km upstream of Lake Volta |
| Crest Height | 185 m National Level Datum (NLD); 186.1 m NLD with flashboards and parapet wall |
| Crest Length | 470 m |
| Dam Height Above Ground Level (AGL) | 90 m AGL |
| SADDLE DAM 1 | |
| Dam Type | Rock fill |
| Location | Right bank of River, 500 m from main dam |
| Crest Height | 187 NLD |
| Crest Length | 300 m |
| Dam Height AGL | 37 m AGL |
| SADDLE DAM 2 | |
| Dam Type | Zoned earth fill |
| Location | North of Bui Camp along right bank of River, approximately 1 km from main dam |
| Crest Height | 187 NLD |
| Crest Length | 580 m |
| Dam Height AGL | 7 m AGL |
| RESERVOIR | |
| Full Supply Level (FSL, also referred to as Maximum Operating Level or MaxOL) | 183 m NLD |
| Reservoir Area and Dimensions at FSL | Area: 440 km$^2$ (21% of Bui National Park)<br>Length: 40 km<br>Average depth: 29 m |
| Storage Volume at FSL | Total: 12,350 million m$^3$<br>Active: 6,000 million m$^3$ |
| Minimum Operating Level (MOL) | 167.2 m |

| PROJECT FACILITY | DESCRIPTION |
|---|---|
| Reservoir Area at Minimum Operating Level (MinOL) | 288 $km^2$ |
| Storage Volume at MinOL | Total: 6,600 million $m^3$ |
| POWERHOUSE | |
| Turbine Number and Type | 3 Francis turbines (133 MW each) |
| Location | Left bank of River, 20m downstream of dam |
| Size of Powerhouse | 90m X 19m |
| Maximum Generation Capability | Maximum generation capability of 400 MW |
| Average Net Generation | 980 GW h/yr |

Source Coyne et Bellier, 2006

**Below is a figure 4.1 detail of the main dam.**



### 4.3 Financial details of the Bui contract

The Minister of Finance and Economic Planning, Mr. Kwadwo Baah Wiredu of Ghana and Mr. Fu Ziying, Vice Minister of Commerce of the People's Republic of China on September 3, 2008 signed a contractual agreement for China to commit $1 billion in loans and grants towards the Bui Dam project at the Osu Castle in Accra-Ghana, the seat of Ghana's president. Out of the total amount, $526 million will be committed towards the Bui dam project.[74] The $526 million loan, known as the Buyer's Credit Loan Agreement between Exim Bank of China and the government of the Republic of Ghana, for the Bui project was laid in the House of Parliament before the Parliamentary Finance Committee for consideration and approval on Tuesday July 24, 2007, in accordance with article 181 (3) of the 1992 constitution. The government of Ghana also contributed $60 million towards the Bui dam project.

The loan was separated into two types of credits called Concessional Loan and Buyers Credit, and their details are broken down below as follows:

**CONCESSIONAL LOAN**

| | |
|---|---|
| Loan Amount | US$270,000,000.00 |
| Interest Rate | 2% per annum (fixed) |
| Grace Period | 5 years |
| Repayment Period | 15 years |
| Maturity Period | 20 years |
| Management Fee | 0.30% flat |
| Commitment Fee | 0.30% per annum |

[74] See Daily Graphic. Thursday September 4, 2008. No. 150453. www.graphicghana.com

**BUYER'S CREDIT**

| | |
|---|---|
| Loan Amount | US$291,680,137.00 |
| Interest Rate | CIRR* 107.5% (6.13%) |
| Grace Period | 5 years |
| Repayment Period | 12 years |
| Maturity Period | 17 years |
| Management Fee | 0.30% flat |
| Commitment Fee | 0.30% per annum |

Source: Parliamentary Finance Committee, July 26, 2007.

Due to the bilateral agreement between Ghana and China for the concessional loan, it will not attract a guarantee or security, but it will be treated under full faith credit of the Government of Ghana.[75] On the other hand, Buyer's Credit will be treated as a secured facility; hence to ensure security of its payment the following securities are required:

- Escrow of net revenue from the Power Purchase Agreement
- Receivables from the sale of up to 30,000 tons of main crop and 10,000 tons of light crop cocoa per annum to China under the Cocoa Sales Agreement (CSA)
- Mortgage of the Land and Building, Equipment and Machinery of the Plant
- Insurance of the Loan by means of insurance policy in favor of lender

The loan agreement with China also required the ministry of energy to enter into a Power Purchase Agreement (PPA) with the Electricity Company of Ghana (ECG) for the purchase of the energy to be generated from the Bui plant. Tentatively, the price is set within the range of 3.5 – 5.5 US cents/KWh.

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[75] See Report by Ghana's Parliamentary Finance Committee (July, 2007), on the Buyer's Credit loan between Ghana and Exim Bank of China.

The loan conditions with Exim Bank of China also required the Ghana Cocoa Board and the Genertec International Corporation of Beijing to enter into a Cocoa Sales Agreement (CSA) in which 30,000 metric tons of main crop Ghana cocoa beans would be allocated to Genertec International Corporation per crop year as part of measures to make cash available for the service of the debt. The Cocoa Sale Agreement will be in force for a period of 20 years, lasting the entire time of the loan.[76]

### 4.4 The Planning Process

Given the negative impacts that dams have on communities, the environment and peoples' lives as result of flooding and inundation, it is necessary to invest significant time and care into the planning stages. This is the time to ensure fair treatment of residents and to specify the economic gains to be expected from the project. In an interview with the CEO of Bui Power Authority (BPA), he stated that what he wants to avoid in the Bui Project is a situation where people will curse at him and drag his name in the mud in the future because he was the CEO of a dam project that jeopardized lives.[77] Mr. Lu of Sino Hydro the Chinese construction company undertaking Bui project also expressed his concerns to me about how all Chinese-related projects in the Ghana were being criticized and how they (Sino Hydro) are determined to get the Bui dam project right.[78] In haste to develop, many

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[76] See Report by Ghana's Parliamentary Finance Committee (July, 2007), on the Buyer's Credit loan between Ghana and Exim Bank of China.

[77] Interview with Fred Oware, CEO of Bui Power Authority in Accra.

[78] Comment by Mr. Lu the director at Sino Hydro head office in Accra, when I was having a chat with him during one of my visits.

governments either ignore the importance of the planning process or refuse to implement recommendations made as a result of Environmental Impact Assessment (EIA) studies or social surveys, thus embarking on projects that result in fatalities to life and property. It was not until 9 months into the construction of the Akosombo dam that resettlement began to receive serious consideration, and 64,000 people from over 700 communities were settled in 52 new communities in the Volta Basin. The communities were provided with dwelling houses, sanitary facilities and schools, but did not receive electricity until more than three decades after their resettlement. Many of the problems of the resettlement were attributed to the modernization approach, which led to the uncritical adoption of mechanized farming to replace shifting cultivation, the lack of resources and poor planning, adopted by the Volta River Authority.[79] Alvares and Billorey argued that in return for 400MW from the Sadar Sarovar and the Narmada Dam (on paper) and about 18 lakh hectares of irrigated fields (also vastly inflated to impress the Tribunal), the Indian people are being asked to permit needless suffering to a population of over 300,000 including tribals, allow brutal and barbarous onslaught on vast wildlife population and encourage the destruction of more than 100,000 hectares of forest and agricultural lands,[80] which suggest that the government will do anything to support their economic rhetoric for dam construction, even to the point of ignoring findings from planning processes.

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[79] See Dodzi Tzikata (2006), Living in the Shadow of Large Dam: Long Term Responses of Down Stream and Lakeside communities of Ghana's Volta Project.

[80] See Claude Alvares and Ramesh Billorey (1998) Damming the Narmada: India's Greatest Environmental Disaster.

The lack of planning during the design stages of dam constructions have resulted in the creation of many man-made lakes and the displacement of poor people in many parts of the world. Over 50,000 people were displaced by the Kariba dam, more the 70,000 people by the Akosombo dam and more than 100,000 people by the Aswan High dam. In Africa, population movement as a result of displacement has been primarily voluntary, since some people choose to remain in conditions perceived to be unfavorable for various reasons.[81] However the proportion of involuntary movement has been increasing as a result of government decisions, which Ghanaians have no option but to obey. Reasons for the above decisions include national security, the threat of epidemic disease, environmental degradation and urban redevelopment as a result of engineering projects, and generally citizens have no choice in the matter once a policy decision has been made for a compulsory move.[82]

The lessons from the above problems of the Akosombo dam and other dam constructions led to the adoption of an effective planning process during the design stages of the Bui dam project. The Energy Ministry of Ghana contracted the Environmental Resources Management (ERM) to conduct an Environmental and Social Impact Assessment study of the Bui hydroelectric project in order to assess the potential impacts associated with the construction of the Bui dam. The study was expected to provide an Environmental and Social Impact Assessment (ESIA)

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[81] See Neville Rubin and William M. Warren (1968), Dams in Africa: An Inter-Disciplinary Study of Man-Made Lakes in Africa.

[82] See Neville Rubin and William M. Warren (1968), Dams in Africa: An Inter-Disciplinary Study of Man-Made Lakes in Africa.

Report, Environmental and Social Management Plan (ESMP) and a Resettlement Planning Framework to be implemented during the actual construction of the dam.

As part of the planning standards for the Bui dam, the Ghanaian government adopted the rules and regulations governing the use of IFC and World Bank financing for development projects. The rules of International Finance Corporation (IFC) Performance Standard 7 (PS7) on indigenous people, are a set of rules laid down by the IFC to guide indigenous people on how to approach companies using IFC loans to embark of development projects on customary lands that will affect the lives of the indigenes. The p7 rules oblige companies seeking IFC funding to follow specific IFC social and environmental rules, also known as performance standards.[83] Companies that violate the PS7 rules or undertake projects that harm the lives or customary lands and resources of indigenous people will not receive IFC funding if the indigenous communities do not support and agree to the project.[84]

The PS7 rules essentially oblige companies using IFC funding to first carry out a social and environmental assessment of their project's risks, and involve the communities to be affected in an active planning process during the design stages in order to ensure that community needs are addressed. The active participation of communities from the design stages into the implementation stages and the monitoring of the project itself are required by companies using IFC funding, and

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[83] See Forest Peoples Programme (October 1998), Indigenous People and World Bank Projects: A Community Guide to the International Finance Corporation's Performance Standards 7 on Indigenous People (PS7). www.forestpeoples.org

[84] See Forest Peoples Programme (October 1998), Indigenous People and World Bank Projects: A Community Guide to the International Finance Corporation's Performance Standards 7 on Indigenous People (PS7). www.forestpeoples.org

broad community support for the project is a requirement for IFC loan qualification. Companies are also required to bring in experts from outside of the IFC to carry out the SEA[85] with active participation from the community, in situations where the project to be undertaken is perceived as harmful to traditional lands and the community is required to mutually agree on the commencement of a harmful project process, which the IFC calls "Good Faith Negotiation."[86] Indigenous people are also required to create the Indigenous Peoples Development Plan (IPDP) if their communities will be harmed by through project, and the companies are required to create an Action Plan that include the IPDP, which the companies must respect at all time hence they risk losing IFC funding. The P7 also requires engaging in active participation with indigenous people using the good faith negotiation process, in order to successfully draw a resettlement plan incase of displacement as a result of the project.

With the entire financing of the Bui dam project coming from Exim Bank of China, the construction being undertaken by Sino Hydro a Chinese company and the host nation being Ghana, it is clear that the World Bank and the IFC had no involvement on the project. Such a situation normally gives the stakeholders involved in the project the opportunity to design and implement the project using their own standards without any international rule or regulation binding them on issues such

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[85] SEA – Social and Environmental Assessment

[86] See Forest Peoples Programme (October 1998), Indigenous People and World Bank Projects: A Community Guide to the International Finance Corporation's Performance Standards 7 on Indigenous People (PS7). www.forestpeoples.org

as planning and implementation. The poor management of the Akosombo dam by the Ghanaian government and the World Bank five decades ago, and the fact that the Three Gorges dam in China resulted in the submergence of over 17,000 hectares of arable land and 7,000 hectare of orchards, eliminating the livelihoods of tens of thousands of farmers,[87] does not imply that failure is inevitable for the Bui dam project. The Bui dam project actually presents the opportunity for the two countries to prove that they have learned from their past mistakes and that it is indeed possible to sustainably build a hydroelectric dam by applying the necessary planning strategies from the beginning.

The Three Gorges dam resulted in the submergence of 624 factories including six major factories in Chongqing, adding to the countries unemployment rate, and embarked on forced displacement and inadequate compensation. Can Sino Hydro a Chinese company, definitely be trusted to use the lessons learned from the Three Gorges to handle a similar project in an effective and professional manner, without any abuse of indigenous peoples rights? Given the lack of technical and financial capacity on the part of the Ghanaians, how will they ensure the effective monitoring of Sino Hydro?

The Ghanaian Ministry of Energy in an effort to ensure a sustainable dam construction after the Akosombo experience, drafted a Terms of Reference (TOR) containing guidelines on how the Bui Hydroelectric Power Project Environmental

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[87] See A Publication of ECA – Watch (September 2003), Race to the Bottom, Take II: An Assessment of Sustainable Development Achievements of ECA – Supported Projects Two Years After OECD Common Approaches Rev 6.

and Social Impact Assessment (ESIA) study should be done, in a contract signed with Environmental Resources Management (ERM) the company responsible for carrying out the ESIA in December 2005. The TOR ensured that the Environmental Impact Study carried out by ERM conformed with Ghana's environmental legislation as well as Environmental Impact Assessment procedures of international financial institutions, in particular the International Financial Corporation (IFC) and the World Bank (WB).[88] Thus the Ghanaian government ensured that the planning standards of Ghana and of the IFC and the World Bank were integrated into the design and implementation of the Bui project. Though the Bui project is not being undertaken with the World Bank's financial support, the Ghanaian government ensured that the project would be carried out in compliance with international best practice by mandating the ESIA to be implemented according to the policies, safeguard procedures and guidance of the World Bank Group.

The World Bank screens projects based on their possible environmental impacts and classifies them as A, B or C (A being the most potentially adverse and C being the least). A hydroelectric power development is normally classified as a Category "A" project, owing to the potentially significant adverse environmental and social impacts, and this triggers a full environmental assessment. The World Bank in its Environmental Assessment Sourcebook publicly provides detailed advice and guidance on the conduct of environmental assessment.

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[88] See Environmental Resources Management (ERM), June 2006. www.erm.com

Below are several of the project elements that the World Bank safeguard policies seek to examine in communities where development projects are being undertaken.

- Environmental Conditions
- Natural Habitats
- Forestry
- Pest Management
- Cultural Property
- Indigenous Peoples
- Involuntary Resettlement
- Safety of Dams
- Projects in International Waters
- Projects in Disputed Areas

In order to ensure that all the above elements were met during the planning stages of the Bui project, broad feasibility studies and social surveys were conducted throughout the Bui dam project area and the entire country. Environmental Resources Management (ERM) and the Bui Development Secretariat (BDS) now known as the Bui Power Authority (BPS) were responsible for the studies.

### 4.5 Social Surveys

A team of six specialist students from the Kwame Nkrumah University of Science and Technology and University of Cape Coast all in Ghana conducted detailed social surveys in the Bui project area regarding the dam to be constructed, for a period of five weeks. The methodology used in collecting primary data by the team of experts consisted of focused group discussion and semi structured interviews. The students went from house to house and interviewed everyone, using very detailed questionnaires to guide their interviews, and the responses from the residents were recorded in detail. Part one of the survey targeted chiefs and village elders, and asked questions such as name of village, name of resident, historical profile of resident, demography/general profile, administration/ leadership, local economy/livelihoods, forest resources/land ownership, potential effect of the Bui dam project, resettlement (for communities to be resettled only) and key social problems and development issues.

Part two, targeted farmers both men and women and focused on the profiles of people engaged in farming, farming inputs, flooding (discussed in villages that are downstream from the dam site), land tenure and use, livestock, gathering of non-timber forest products, market/transportation/supply chain, challenges to farming, social problems and development issues and potential effects of the Bui dam project.

Part three targeted the fishing community and focused on general profile, location and availability of fish, fishing methods, fishing supply chain, challenges, livelihood and potential effects of the Bui dam project, resettlement (for communities to be

settled) and key social and development issues. Part four of the interview targeted the hunting community and asked questions like general profile of hunters, hunting location, techniques and availability, animals hunted, non-timber forest products, livelihood and potential effect of the Bui dam project and key social problems and development issues. Part five targeted women (including health) and focused on issues like quality of life, occupation/livelihood, health, morbidity, mortality, lifestyle, healthcare facilities – quality and access, livelihood and potential effect of the Bui dam, resettlement (for communities to be resettled only) and key social problems and environmental issues.

Part six targeted small fishing and farming villages including chief and residents (men and women) and focused on issues like such as historical profile, demography, administration/leadership, local livelihoods, fishing profile, location and availability of fish, fishing supply chain, farming, flooding, non timber products, livelihood and potential effects of the Bui dam project, resettlement and key social problems and development issues. Part seven targeted teachers and the focus was demography, key social and development issues, status of education, village infrastructure/village property and potential effects of the Bui dam project. Traders were interviewed about their general profile, supply chain, competition, trade challenges, attitude towards the Bui project, resettlement and key social problems and development issues. Charcoal burners were asked about their general profile, sources and

marketing, availability of raw materials, attitude towards the dam project and key social problems and development issues.[89]

The Bui Development Secretariat and the Environmental Resources Management also conducted nation wide and local meetings to discuss the ESIA of the Bui power project. One of the above national meetings known as Nationwide Stakeholders Meeting was held in Accra on April 25, 2006, involving 121 participants from NGOs, the media, the public service, academia and the private sector to discuss the potential environmental and social impacts of the Bui power project and how they should be addressed.[90] Several local public hearings were also held in the Bui dam project area, to inform interest groups about the project, determine issues of particular concern and provide feedback on the findings of the ESIA. On August 28, 2006 public hearings were held with the chiefs and residents of Banda Ahenkro and Bungasi in the Brong Ahafo Region to discuss the above agenda.

### 4.6 Feasibility Studies

The Environmental Resources Management (ERM) also conducted technical feasibility studies on the main Bui dam known as the Environmental and Social Management Plan (ESMP). The studies focused on issues of detailed design issues, dam safety, operating time of the project, site preparation, wildlife rescue, construction management, employment of workforce, worker code of conduct, employment policies, community support measures, the Bui National Park

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[89] See Environmental Resources Management (ERM), June 2006. www.erm.com

[90] See Bui Development Secretariat and Environmental Resources Management (April 25, 2006): A Report on The Environmental and Social Impact Assessment of the Bui Hydropower Project.

Management Plan, Watershed Management Plan, Monitoring Program, healthcare provision, relocation and resettlement and compensation.

## Chapter Five

## Analysis of the Bui Dam Project

This chapter will use both secondary data gathered during the course of my research and primary data from my fieldwork to analyze the impact of the Bui dam project on the people affected, Ghanaian energy and economic prospects and more broadly the Ghana – China development relationship. However, because the construction of the Bui dam project started in 2007 and is scheduled to be complete 2012, it should be noted that the project is still in the progress and my analysis will not be able to assess the actual implementation of all safeguards as yet to be carried out. Due to timing of my thesis, I will focus more on ERM's analysis and the current aspects of the project that are being addressed by Sino Hydro and Bui Power Authority (BPA) as of now, since I have concrete data on the details.

The ESIA conducted prior to the Bui dam Project, raised a lot if concern about the lives of the people in the Bui community that needs to be addressed in order to reduce the impact of the project on both the local community and the country. The most pressing issues revealed by the environmental and social impact assessment studies in addition to economic development that needs to be addressed to ensure the smooth running of the project are as follows:

- Displacement, Resettlement and Compensation
- Bui National Park
- Environmental Impact
- Labor

- Economic Impact
- Social Impact
- Alternative Sources of Energy
- Impact on China – Ghana Relationship

Each of the above is addressed, in turn, below.

### 5.1 Displacements and Resettlement

The Bui project is estimated to affect over 2000 people in living in the area, either through direct inundation by the dam, loss of farmland due to inundation, displacement due to transmission lines or road construction and charged rivers causing displacement downstream as shown in figure 1.2 above. Most of the residents in these villages will lose their livelihood of either farming, fishing or hunting, hence the need to intervene and help them get their lives back together. The Bui Power Authority (BPA) and Sino Hydro, with the help of the Ghanaian government, took up the task to ensure smooth relocation and payment of compensation to the affected residents. Below in table 5.0 is the Ghanaian law on displacement and the World Bank's policy on involuntary settlement.

**Table 5.0**

Government of Ghana requirement for displacement

| |
|---|
| Under Ghanaian law, the 1992 Constitution provides that where a compulsory acquisition or possession of land affected by the State involves displacement of any inhabitants, *the State shall resettle the displaced inhabitants on suitable alternative land with due regard for their economic well-being and social and cultural values* |

Objectives of the World Bank Involuntary Resettlement Policy (OP 4.12)

According to the World Bank Operational Policy on Involuntary Resettlement (OP 4.12) involuntary resettlement may cause severe long-term hardship, impoverishment, and environmental damage unless appropriate measures are carefully planned and carried out. For these reasons, the overall objectives of OP4.12 are the following:

a) Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.
b) Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.
c) Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

Source: Environmental Resources Management

In order to ensure smooth resettlement in the area, Ghana Lands Commission has been working in the area to ensure that proper land titles are issued to land owners in the area, while the Lands Valuation Board is engaged in detailed crop and property valuation in the affected areas to determine the fair market value for crops that will be lost in the area.[91] The above process will to take some time to complete

[91] I conducted a detailed interview with Bui Power Authority's Environmentalist on the project site. He is the person in charge of organizing meetings and public hearings in the dam area, to discuss issues relating to relocation and compensation and also served as the direct communication between residents and BPA head office in Accra. The BPA has a camp on the project site for its staff, where they conduct quality control work and also serve as a communication point for the residents incase there is a problem. BPA's entire staffs are engineers or university graduates from the elite universities in the country, and were living in air-conditioned mobile homes with 3-course meal being provided everyday. Sino Hydro also had a camp on site to house both the Chinese and

due the poor nature of the area of operation; poor road network coupled with lack of modern survey equipments at the disposal of the Lands Valuation Board.

Meanwhile some villages were directly affected as soon as construction of the dam began in the area in 2007. As of July 2008, Sino Hydro has been undertaking rock blasting and river diversion at the project site to enable the construction of the main dam. The movement of heavy duty trucks on site and loud noise from the rock blasting makes it very risky for residents of Brewohodi, Lucene, Agbekikuro and Dam site village to live in their houses and go about their normal business, because they are actually located on the construction site as shown in figure 4.0 above.

The BPA and Sino Hydro, thus decided to relocate the above-mentioned villages before construction began, so the BPA held several public hearings to inform residents of these villages about the displacement and discussed resettlement plans with them on several occasions. Residents of the above villages are not indigenous people, they are migrants who had migrated to farm, fish and live in the area for a long time. They either migrated from the south as fishermen or the north as farmers to the area and were giving lands by the Gyama traditional council to live and farm on, so technically speaking they are not original land owners even though they have been living in the area for decades. Displacing them without any effort by the government to resettle them elsewhere will be problematic, since they have

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Ghanaians working for the company. The Chinese were mostly engineers and the Ghanaians were unskilled or semi skilled laborers operating the construction machines on site. The Ghanaian laborers were recruited and working directly under Sino Hydro, hence the Ghanaian staff of BPA had no involvement in their working conditions, leaving the Chinese to run the show and they were mostly housed in abandoned classrooms, where 14 to 20 people slept in one room with no air condition to prevent mosquito bites.

nowhere to go to. Prompting the government to acquire a piece of land from the Gyama traditional council downstream to be used for the resettlement site, and constructed solid block houses, provided KVIPs and drilled a borehole to provide good drinking water. Officials of BPA organized meetings and took the victims to the resettlement site while the houses were under construction to show then around and share their opinion about the facilities at the new place.

The residents in these villages have been living in houses made of mud and thatch, where each family or household had his or her own separate compound from other families, with no toilet facilities and they were drinking directly from the Black Volta River. Below in figure 5.0 are two pictures of the same family standing in front of their old mud house at Brewohodi just before moving to their new house at the resettlement site, and a picture of their new resettlement house at Gyama showing the improvement in housing construction.

**Figure 5.0 old and new house of one family**

The residents agreed to relocate to the new site, only if they will also be provided with parcels of land to farm and the fishermen also requested to be allowed to fish upstream of the dam. With the help of the Gyama chief, the government was able to acquire parcels of farmlands at Gyama and allocated it to the relocated villagers to be used for farming. As of August 2008, engineers from BPA were surveying the acquired farmlands in order to properly demarcate boundaries for each resident to avoid future conflict. Until the above process is completed the residents are just farming on the land.

### 5.1.1 Resettlement Housing Formula

The BPA adopted a housing design standard that ensured that every household or family enjoyed the privacy that they were used to in their old villages. In the old villages, families had their own houses surrounded by a piece of land and most people had two bedroom mud houses. In order to maintain that level of privacy, all the houses constructed for resettlement were two bedroom houses with a compound surrounding them, hence families that owned either two bedrooms or one bedroom were given a full two-bedroom house each, just to avoid confrontations in the future. BPA also provided trucks to help transport the belongings of every family from their villages to the resettlement site and for documentation purpose, all the households were photographed in front of their old house on the last day of relocation and on the first day at the resettlement site.[92]

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[92] The BPA environmentalist also stated that the resettlement exercise was very quiet and peaceful, mainly because the people currently being resettled are migrants to the area and he anticipates

### 5.1.2 Compensation

Every member in each household was given 50 Ghana cedis during the first week of arrival at the resettlement site in Gyama, so if there is a household with five members the total amount received by that household will be 250 Ghana cedis. Another 50 Ghana cedi was distributed to every member of a household in the second week. The purpose of the money is to help the residents clear their new farmland to begin farming. In all, a total of 500 Ghana cedis will be paid to each household member on installment basis to help them start either fishing or farming, the villagers will be monitored to ensure that the money given them is used for its purpose, hence if BPA authorities find out that a resident is using his/her money for other purposes such as marriage of an extra wife that member will forfeit the additional installment payable in the future. Below in figure 5.1 is a picture of the BPA environmentalist making installment payments to the resettled residents at Gyama; each person's thumbprint is taken to acknowledge receive of payment by the BPA. Also is table 5.1 below, showing details of the total cost of relocation and compensation at the Bui dam area.

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bigger problems in the future when it comes to the resettlement of the indigenous people such as the Bu village.

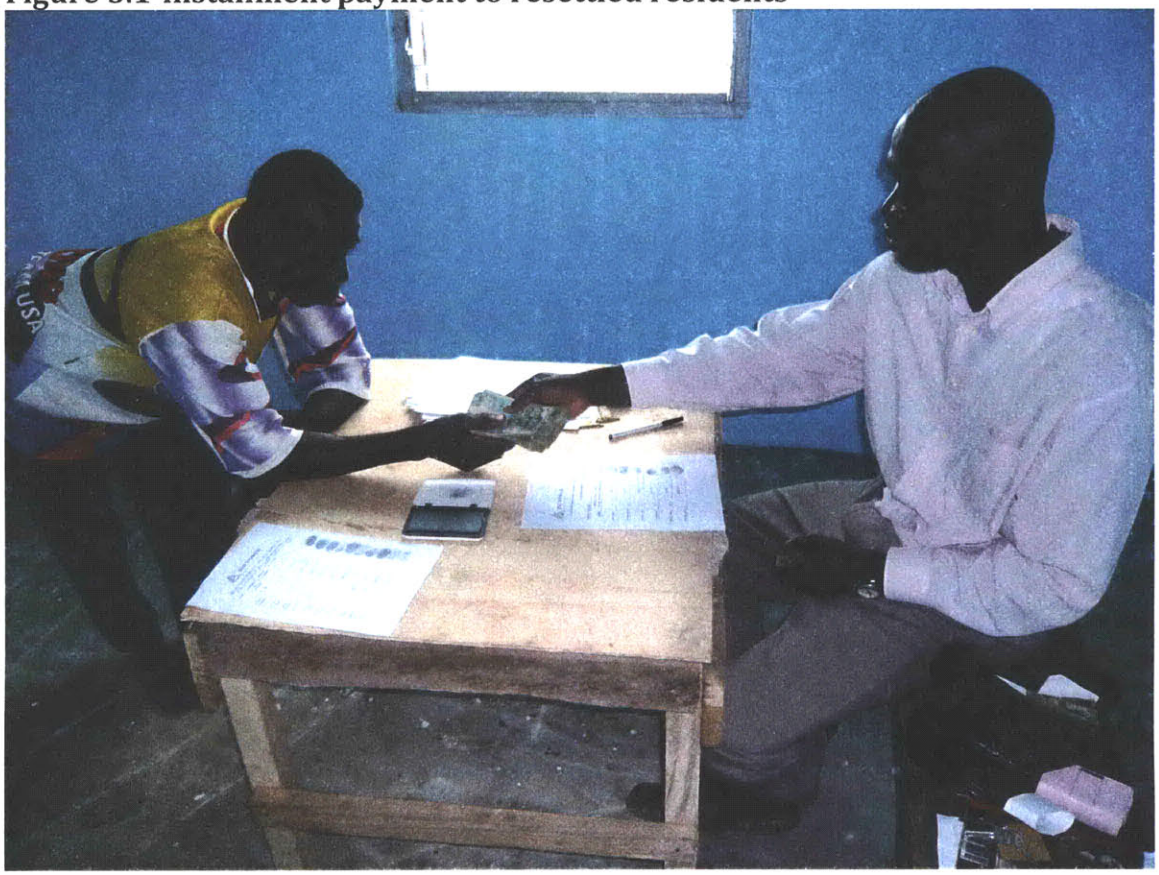
## Table 5.1 showing estimated cost of relocation and compensation at Bui

| Item | Cost US$ | Assumption/Comment |
|---|---|---|
| 1. Compensation for dwellings and structures:<br>- Living quarters<br>- Kitchen<br>- Other buildings<br>Total of above | <br>812,939<br>81,966<br>18,250<br>913,155 | The sum total of the estimated replacement value per $m^2$ multiplied by total area of dwelling/structure. |
| 2. Compensation for plantation trees | 1,086,417 | Based on an inventory of trees per affected household and market value per variety, based on yields. |
| 3. Compensation for house plot trees | 6,996 | Based on 740 trees valued at a maximum unit value of 86,650 Cedis. Assumes all trees "mature". |
| 4. Compensation for crops and lost crop production | 88,267 | Crop compensation based on an average crop value per farm, and market value per variety. For lost crop production, as outlined in *Section 5*, the government is required to pay a displacement cost in addition to replacing land. The average income earned in a good month from farming is 600,000 cedis. It is assumed that, as an upper bound estimate, this income is lost to each household for a period of 8 months (i.e. time between last crop and commencement of project-related employment). |
| 5. Compensation for traders | 5,000 | Indicative estimate is based on employment in trading as reported in the social survey for 49 people engaged in trading activities. |
| 6. Transportation allowance | 33,600 | A transportation allowance of $200 per household |
| 7. Site Planning | 84,000 | Surveying, land use assessment, master plan, demarcation and registration of plots in consultation with resettlement committee. Assumes a cost of $500 per household. |
| 8. Compensation for public structures | 77,383 | An estimate was derived by taking the maximum unit value for a structure (assumes sandcrete block construction), and multiplying it by the total area for the structures documented in the community assets survey. Schools, and churches are reported on here. The figure includes an estimate for the school in Agbegikuro, which was not documented in the community assets survey. |
| 9. Construction or upgrading of infrastructure | 125,000 | Infrastructure could include wells and latrines for improved water and sanitation services, and generators for improved energy supply. Provision will need to be made for installing as well as maintaining infrastructure. Identification of host sites is necessary to determine budget. An indicative estimate is presented here. |
| 10. Compensation for relocation of religious property/graveyards | 10,500 | Assumes $1500 cost per village to relocate religious sites |
| 11. Livelihoods Enhancement Program | 1,175,625<br>Doug: Not very | This figure includes programme costs, staff salaries, overheads, and capacity building/training. See Section 9.4 for greater detail on this programme. |

| Item | Cost US$ | Assumption/Comment |
|---|---|---|
| | transparent | |
| 12. Ongoing Monitoring (NGO) | 60,000 | Quarterly monitoring for twelve quarters @ $5,000 per quarter. |
| 13. External Evaluation | 200,000 | Three evaluations. |
| **Subtotal** | **3,685,943** | |
| *Contingency* | *368,594* | 10% of sub-total |
| **Total** | **4,054,537** | |

Source: Environmental Resources Management

**Figure 5.1-installment payment to resettled residents**



The BPA also provided free training skills in new methods of farming, fishing, trading and construction to the residents, in order to help them modernize their occupation and make them more self-sufficient. Meanwhile the BPA is also waiting

on the Lands Valuation Board to complete its valuation of crops and property that has been lost by the villages already resettled in order to compensate them based on the valuation figures, since the residents have been prohibited from visiting their old farms situated on the dam site. Below in figure 5.2 is a picture showing some of the meetings held by BPA and Sino Hydro to discuss resettlement and other issues bothering the Bui area residents as a result of the dam construction.

**Figure 5.2 Public hearing at Bui**

**Figure 5.3 BPA surveyors at a farmland at Gyama**

## 5.2 Bui National Park

The Ghana Wildlife Division is the agency in charge of managing the Bui National Park. It has fulltime staff that carry out maintenance and surveillance activities to prevent people from hunting the animals in the park and its headquarters is located at the Bui Camp in the southernmost portion of the park. The Bui National Park is the only protected area in Ghana with large components of undisturbed riverine forest associated with wooded savannah,[93] but it is still the least developed protected area in the country.

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[93] See Environmental Resources Management (ERM), June 2006. www.erm.com

The park serves as home for several species of wildlife, insects, small mammals, bats, birds, reptilians and large mammals. In total about 80 species of wildlife found in the park are classified as of conservation concern internationally and also protected under Ghana's Wildlife Law, see appendix 1 for a list of species of conservation concern found at the Bui National Park. Nineteen of the 80 species are considered to be of conservation concern (IUCN Vulnerable, Near Threatened or Conservation Dependent), with all the species of concern falling under the 3 types of classification below:

1. World Conservation Union (IUCN) Red List of Threatened Species (IUCN 2004)
2. Convention on International Trade in Endangered Species (CITES)
3. Draft Ghana Wildlife Act (2005), comprising of a list of nationally protected species.

The key concern of the large mammals in the Bui National Park are the hippopotami, since IUCN Red-Listed them as the most endangered species with regard to the Bui dam project due to their limited distribution in the country and West Africa (about 7,000 remain in the region).

The Bui national park is documented to have a population of 305 hippos, with a mean of 2.11 hippos per kilometer based on the hippos seen in each section of the river. There are 13 different hippo pools evenly distributed between the southern and northern portion of the Black Volta River, and all the pools will be inundated as a result of the dam construction. Below in figure 5.4 is a picture of

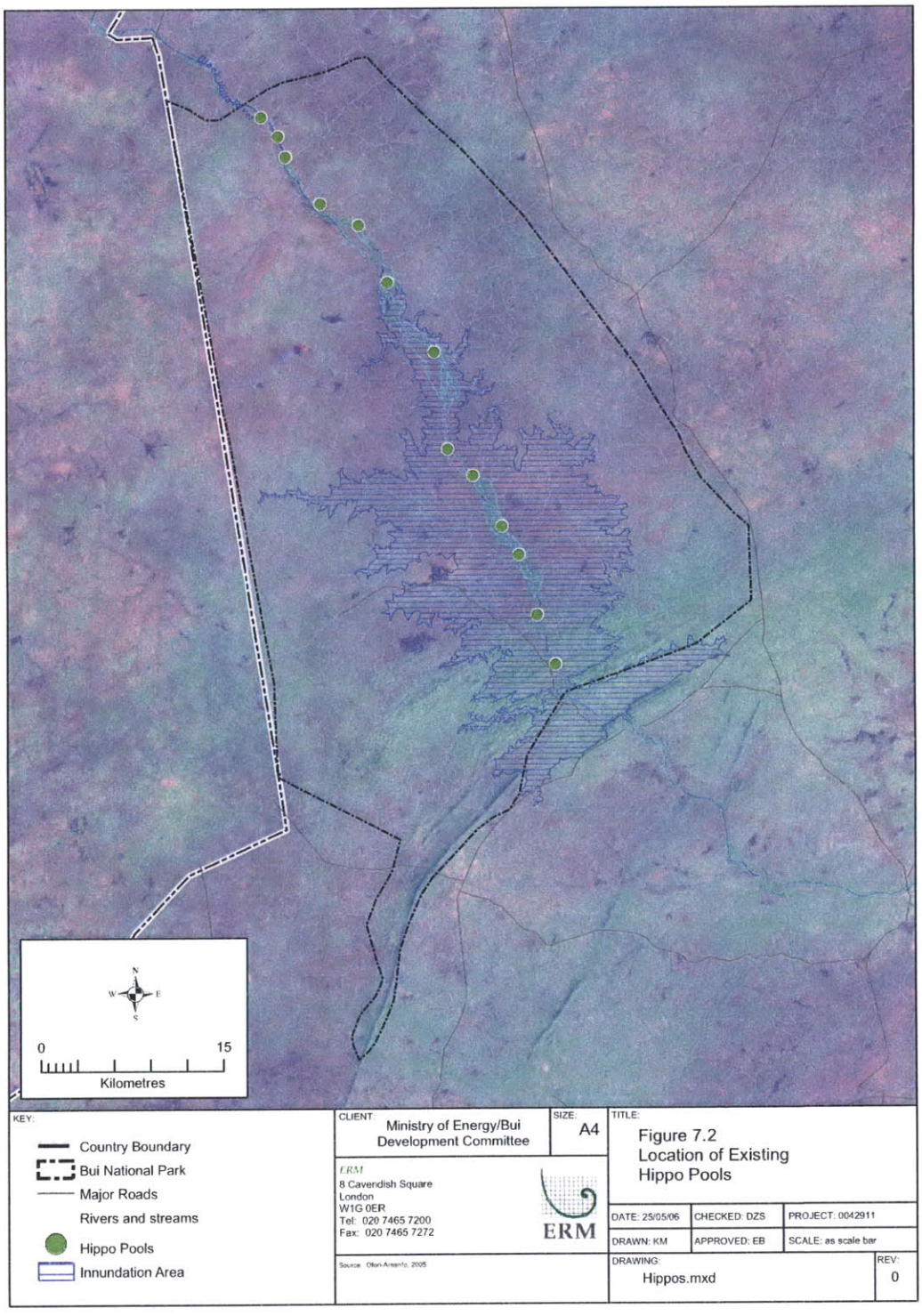
hippos spotted in the Black Volta River. The Bui dam project will inundate a large portion of the Bui National park (21%) resulting in the eradication of most of the species that have been protected from hunters by the parks guards. Hence, the need to design a comprehensive plan to protect the lives of these animals in the park, but the Wildlife Division of Ghana has never placed a high priority on the preparation of a development and implementation of a protected area plan (PAMP) for the Bui National Park. So how will the Wildlife Division handle the impact of the Bui dam development on the Bui National Park? The ESIA study conducted was able to reveal the impact that the Bui dam will have on the park as the first step to addressing the problem. Below in figure 5.5 is a map showing the inundated areas of the dam and the exact location of hippo pools within the reservoir.

Figure 3.4

Photo 14: Adult hippopotamus and calf in Hippo Pool #2.

Photo 15: Adult hippopotamus and calf in Hippo Pool #2.

**Figure 5.5 showing hippo pools in green dots on the Black Volta River**



The Environmental Resources Management study suggested the adoption of a comprehensive management plan by the Wildlife Division of Ghana, to engage in a series of mitigation measures that can be most effectively coordinated under the umbrella of a Protected Area Management Plan (PAMP) for the creation of an extended Bui National Park.[94] The PAMP should be implemented in close coordination with contractor, the Bui Environmental and Social Management Plan team and local authorities. However the Bui dam project is only required to finance the cost of the parts of the PAMP implementation that relate to the Bui Project mitigation, leaving the Wildlife Division to finance the remaining cost of park extension at its discretion, based on biodiversity conservation priorities. The above approach to the Bui National Park problem is not sustainable, given the fact that the Wildlife Division is one of the poorest government agencies in the country and is heavily understaffed with barely any capacity to handle this huge task of park extension and evacuation. Raising the question of why the Ghanaian government decided to pay more attention to displacement and relocation of the Bui residents, through the use of international standards but did not do approach the displacement of wildlife with the same level of expertise and care?

The park will be have to extended downstream of the dam site and most of the animals especially the hippos will have to be relocated downstream to avoid drowning during the flooding of the dam, but the present capacity of the Wildlife Division shows that they cannot handle the relocation of the pools to accommodate

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[94] See Environmental Resources Management (ERM), June 2006. www.erm.com

the hippos and other endangered species within the park. As of August 2008, the ESIA study had been presented to the Wildlife Division and the Ghana's Environmental Protection Agency (EPA), with details stating the impact that the Bui Dam will have on the Bui National Park and it surroundings. When I visited the EPA head office in Accra to enquire about the Bui National Park, they admitted to have received a copy of the ESIA prepared by ERM but had no plan on the table as to how the animals and the park itself will be saved through the PAMP due to lack of financial and technical capacity. The BPA and the Chinese contractor (Sino Hydro) undertaking the dam project also had no plans for the endangered species, with their concern mostly being the construction of the dam.

### 5.3 Environmental Impact

The environmental impact of the Bui dam project can be separated into three different areas, namely the social impact, physical impact and the biological impact. All the three categories above will have serious impacts on the lives of the indigenous people and the migrants living in the area, hence the need to carefully address them in order to minimize the impact.

#### 5.3.1 Physical Impact

The Bui dam will create a reservoir occupying an area of approximately 440 square km and flood 21% of the Bui National Park as shown in Figure 4.0 above. The construction of saddle dams, powerhouse, switchyard, road upgrade and new transmission lines from the site to Teselima, east Kintampo and Sunyani will also

result in further land take by the project. Land to be flooded by the projects is mostly vegetative comprising of 50% grassland, 25% savannah woodland and 25% water and riverine forest.[95] The dam will also inundate six villages with a population of 1,360 people and other villages will be required to relocate due to their current location within the Bui National Park, and physical isolation by the reservoir with no easy access to any part of Ghana, four other villages with a population of 7,500 will lose access to their farmlands and forest.

About 85km of river bank will be lost since the reservoir will create about 500km of reservoir shoreline, flow of the existing river will be captured in the reservoir and released at a controlled rate for the generation of power causing downstream river flows to even out, with reduced flood peaks between August and October and increased low flows between December and June. The reduction in river flows downstream will result in consequences that will affect aquatic and riverine habitats and existing water users, fisheries and floodplain agricultural that depend on the regular replenishment of nutrients from silt-laden floodwater will also be affected.[96] Figure 5.6 below shows an areal map of the entire Bui National Park and the vegetative areas to be inundated by the reservoir.

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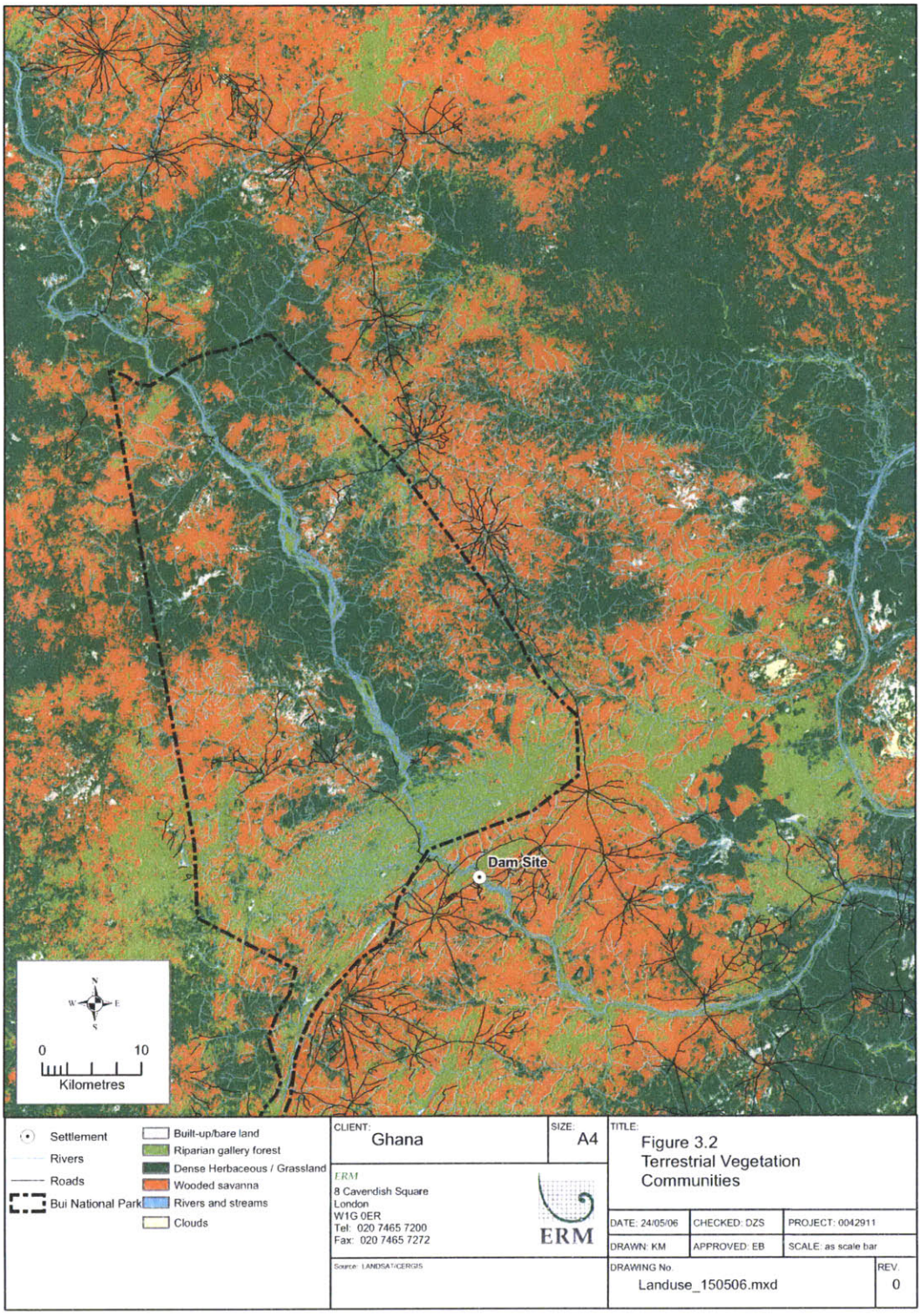
[95] See Environmental Resources Management (ERM), June 2006. www.erm.com

[96] See Environmental Resources Management (ERM), June 2006. www.erm.com

**Figure 5.6**


Dam Site
N
W
E
S
0
10
Kilometres
Settlement
Rivers
Roads
Bui National Park
Built-up/bare land
Riparian gallery forest
Dense Herbaceous / Grassland
Wooded savanna
Rivers and streams
Clouds
CLIENT: Ghana
SIZE: A4
TITLE: Figure 3.2 Terrestrial Vegetation Communities
ERM
8 Caverdish Square
London
W1G 0ER
Tel: 020 7465 7200
Fax: 020 7465 7272
ERM
DATE: 24/05/06
CHECKED: DZS
PROJECT: 0042911
DRAWN: KM
APPROVED: EB
SCALE: as scale bar
Source: LANDSAT/CERGIS
DRAWING No.: Landuse_150506.mxd
REV.: 0

### 5.3.2 Biological Impact

Studies have suggested that greenhouse gas emissions from reservoirs due to rotting vegetation and carbon inflows from the catchment may be a significant source of global greenhouse gas emissions.[97] Greenhouse gases mostly made up of carbon dioxide and methane are released into the atmosphere from reservoirs that flood forest and other biomass, either slowly of rapidly. The release of carbon dioxide and methane are thought to contribute an estimated 7% of global warming impact on human activities.[98] The Bui dam's impact on climate change will depend on three factors; the influx rate, the total surface area of the reservoir and the amount of biomass. With a surface area of 440 square km the Bui dam is not large compared to other man-made lakes in Africa. According to Coyne et Bellier, the carbon cycle impact as result of the Bui dam construction will be minor, hence there is no need to expect a significant release of carbon dioxide into the atmosphere. By comparison with the "cleanest" form of thermal power generation (combined cycle gas turbine or CCGT) to the emissions from generating 1,000GWh/yr are small.[99]

### 5.3.3 Social Impact

The permanent displacement of over 1,400 people from their homes, the displacement of about 9,000 peoples from their farms and forest, the loss of lands and natural resources and loss of water will impact the economic life in the area and increased health risks, putting more pressure on the inadequate infrastructure and

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[97] See World Commission on Dams, www.dams.org/report

[98] See International Rivers Network: Greenhouse Emissions from Dams (2002)

[99] See Coyne et Bellier and Environmental Resources Management (2006)

social services like schools and community centers and create unemployment unless adequately addressed. The Dam will lead to loss of livelihoods and immovable assets of the 7 villages to be inundated, farmers will also be losing crops and trees to the floods, further impoverishing the them. Prior to the dam construction, families were living in separate villages based on either their religion or ethnicity, but the first resettlement site built adopted a holistic approach by putting all the families into one single village without consideration ethnicity or religious differences.

The resettlement formula assumed that the residents can live together in peace provided families have their separate compound, but there is a high risk of conflict arising between the families in the future due to differences in religion and ethnicity. According to the environmentalist on site, households were demanding separate places of worship to practice their religion, thus Christians wanted a church, Moslems wanted a mosque and the tribal people wanted their own shrine to be built on the new settlement. Lack of financing forced the BPA to consider the construction of one community center, so everybody can go and worship there, which is risky because of the possibility of residents clashing on issues such as time, space and noise in the future.

The standards for designing the integrated communities were set by the BPA in consultation with Ghana Lands Valuation Board and the Planning Department. It was obvious the BPA officers did not consult with the local residents before embarking on the construction of the resettlement site, which explains why they are

running into the problem of disagreement on a common place of worship for all the residents.

### 5.4 Socio Economic Impact

The socio economic impact of the Bui dam project has a two-way dimension, local impact and national and international impact.

#### 5.4.1 Local Socio Economic Impact

On the local front, the construction of the Bui dam has resulted in the influx of about 2000 construction workers into the Bui dam area and majority of them are migrants from surrounding villages of either the Brong Ahafo Region or the Northern Region, which will definitely have an impact on the Bui resident communities. The migration of these workers with different cultures into the dam area has created a lot of tension between the locals and the outsiders, cultural differences are clashing between the two groups and crime rate has definitely increased in the area as a result of the casual migrant workers. The sudden population explosion of Bui dam area villages like Banda, Bui village and Dam site village has led to an increase in pressure on the already lacking infrastructure in these villages, such as healthcare, toilet and transportation. The high number of male migrants into the area has also mounted pressure on the women, as a result prostitution is surfacing in the neighboring villages as some women take the advantage of the situation while the men are willing to pay because they are living and working in the middle of a forest, where the nearest big town close to the dam site is about 4 hours drive on a dirt

road with 2 mini buses making 2 trips each way a day. Hence, workers are not motivated to travel out of the dam construction site unless there is an emergency.

Brong Ahafo Region produces about half of the countries foodstuff because of the rich nature of their soil and the abundant rain they receive each year, but the construction of the dam has resulted in majority of the youth in the region, ignoring the farming profession and taking up unskilled jobs on the Bui dam site with Sino Hydro. In the long run, the above situation will result in less food production in the country as a result of decreased food supply coming from the Brong Ahafo Region resulting in increase food prices in the country. However the flow of casual migrants into the dam site area has led to the creation of jobs for women especially because they cook food and sell them to the workers on site. Bu these women selling food to the workers will be out of job by 2012 when the dam is completed and workers move out of the villages in the dam area.

### 5.4.2 National and International Socio Economic Impact

Ghana has never been energy self sufficient, it has relied on electricity imported from Cote d'Ivoire to supplement domestic needs during peak hours. The problem was further exacerbated in 2006 through 2008 when the lack of rainfall and siltation of the Akosombo dam caused the Volta River Authority and the Electricity Company of Ghana to ration power through the load shedding scheme in the country, in order to keep businesses running. Coyne et Bellier's study forecasted in 1995 that both domestic and industrial demand for energy in Ghana will rise from

7,235 GWh in 1997 to 11,953 GWh by 2020, hence the installed generation capacity will need to increase from 1067 MW in 1997 to 1899 MW in 2020. Thus Ghana will need an additional 100MW of electricity capacity every two years in order to be self sufficient, supporting the need to build the Bui dam which is expected to generate 400MW of hydroelectric to help meet the above forecast.

Generating enough electricity will also mean that business and the industrial sector can be assured of continuous power supply to run their operations, which will lead to the creation of more jobs and economic activity of the country. The money spent to import energy from Cote d'Ivoire can also be channeled to other sectors of the economy such as healthcare, education and transportation since this sectors lack the adequate investment needed in the 21st century. The excess electricity generated will also be exported to neighboring countries of northern Togo and Burkina Faso for foreign exchange, which can be used to help boost other sectors of the economy.

However, the cost of displacement and destruction to be caused by the Bui dam to human lives, animals, property and the climate can outweigh all the benefits anticipated from the project above. Dams and big projects have been perceived to be the only way to attain economic success in developing countries, but they never produce positive results in the long run due to either sustainability issues or poor contractual agreement issues. The Power Purchase Agreement (PPA) analysis prepared by the independent Prayas Energy Group of India demonstrated that the Bujagali Dam (Uganda) original agreement signed with U.S based AES Corporation

fell short of international standards. Meaning Uganda will be faced with an average of $20 million in excessive payments each year if the project moves on under the current contract.[100] The above study by Prayas was only possible to conduct because the Ugandan government released the contract document to the public.

Ghana, has also failed to release the turnkey contractual agreement signed between Ghana and the Exim Bank of China on the Bui dam project to the general public, making it nearly impossible to analyze the terms of the contract and actually see what each country is getting from the project and why the Chinese are heavily involved in all aspects of the project. It is interesting to note that most countries in Sub Saharan Africa fail to adequately follow specific IFC guidelines and regulations when undertaking developing projects with financing from the Bretton woods Institutions, due to tough IFC requirements. Which has motivated the new relationship between the Sub Saharan Africa countries and China known as the "South-South relationship," the similar characteristics of these countries make it easy for these kind of bilateral agreement to be signed, but who is gaining in the long run and who will end up losing?

### 5.5 Impact on Labor

The ERM's environmental and social impact studies focused primarily on the impact that the project will have on the environmental and the physical displacement of the

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[100] See ECA – Watch (September 2003), Race to the Bottom, Take II: An Assessment of Sustainable Development Achievements of ECA – Supported Projects Two Years After OECD Common Approaches Rev 6.

residents in the area. It does not suggest any guidelines regarding labor activities on the project site. The ERM report referred to an Employment and Workforce Policy document from an internationally financed project to be used as the guidelines for addressing labor issues on site, without giving and specific guidelines. During my fieldwork at the Bui dam project site, I realized there were complains on site by the Ghanaian semi skilled and unskilled laborers working for Sino Hydro.

The stakeholders involved in the project are the Ghana Ministry of Finance and Economic Planning, Ministry of Energy, the Bui Power Authority (BPA) and Sino Hydro the Chinese construction firm in charge of building the dam. The Bui Power Authority is an autonomous agency commissioned by the President of Ghana in 2007 to monitor the overall Bui dam project and also conduct quality control operations on site. The Chinese company (Sino Hydro) is in charge of recruiting and managing both unskilled and semi skilled Ghanaian workers for the construction of the dam and also performed all the technical and professional work on site, which has resulted a disconnect between BPA officials and Sino Hydro officials regarding on site labor. As a result, BPA officials on site are out of touch with issues of labor abuses experienced by the Ghanaians employed by Sino Hydro. The above structure of management on site between BPA and Sino Hydro has resulted in a lot of unfair labor practices, which I will discuss below:

### 5.5.1 Salaries and Wages Paid to Ghanaian Sino Hydro Workers:

The current minimum wage in Ghana was set at 2.25 Ghana cedis per day by the Minister of Manpower, Youth and Employment in March 2008 according to the National Tripartite Committee[101], which is the equivalent to US $1.59 per day. Ghanaian employees working for Sino Hydro as semi skilled or unskilled laborers are paid 3.00 Ghana cedis per day[102], which is equivalent to US $2.17 per day. In a month each Sino Hydro worker is paid 90 Ghana cedis or US $63.49. The above figure shows that Sino Hydro is paying 26% more than the regular minimum wage earned by other Ghanaian employees. This can be argued as a better wage compared to the country's minimum wage standard, but the argument should rather focus on a multinational electricity construction company with a portfolio of $1 billion on the Bui contract alone paying such meager wages to its Ghanaian workers. Because Sino Hydro fails to release information about the pay structure of the Chinese unskilled and semi laborers on site, it is difficult to determine the difference in the pay structure between these two groups on site. Making it difficult to determine whether both groups are being treated equally regarding wages.

On the other hand, the Ghanaian engineers or elites employed by the Bui Power Authority to oversee the dam project and conduct quality control work on site are being paid lucrative salaries per month by BPA. As result they are far better off than their unskilled and semi skilled Ghanaian counterparts, which worsens the

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[101] See The Chronicle, http://allafrica.com/stories/200803101346.html

[102] A semi skilled laborer confirmed this figure during an interview while conducting my field research on site.

disconnection between the two groups of Ghanaian workers on site. In an interview with the Chief Environmentalist on site, he told me that they do not get themselves involved in issues of labor abuse concerning the unskilled workers since the Chinese are authorized to handle such issues.[103]

### 5.5.2 Working Hours and Conditions:

The established working hours per week in Ghana by law is 45 hours but most unionized workers used their collective bargaining force to establish 40 hours per week working period.[104] However, the Ghanaian workers under the management of Sino Hydro are supposed to work a 12-hour shift a day and work 7 days a week, starting from 7am to 7pm and 7pm to 7am making a total of 84 hours a week per worker. The extra 39 hours worked as overtime are not calculated and paid as overtime. Employees are paid their regular 3 Ghana cedis a day on a monthly basis, which means each worker is paid 90 Ghana cedis for working a minimum of 360 hours total in 30 days.

If an employee misses work for 3 days, he is fired automatically by the Chinese and replaced by a new recruit. When there is a need for extra workers due to shortage of labor, the employees are asked to work the extra hours besides their 12-hour shift as overtime, but the above overtime is not paid by the hour. Rather each employee is paid and extra 3 Ghana cedis a month for working overtime. On the other hand, the

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[103] Interview with Mr. Salifu Wumbilla the Environmentalist on the Bui dam site

[104] See Ghana Working Conditions, http://www.nationsencyclopedia.com/economies/Africa/Ghana-WORKING-CONDITIONS.html

Bui Power Authority employees on site work 48 hours or six days a week. The above is an indicator of how the Sino Hydro employers on the Bui Dam project are abusing the unskilled and semi Ghanaian workers.

### 5.5.3 Health and Safety Conditions:

The project site is located in the middle of the forest along the Black Volta and within the Bui National Park. The entire area is infested with Black flies that cause onchocerciasis or blindness if they bite you on several occasions and there are mosquitoes in the area. However Sino Hydro ignored the above threat to the lives of the workers, by failing to provide them with better housing and working gears that will minimize the rate of black fly and mosquito bites. Sino Hydro houses the workers in an abandoned classroom block, where about 18 workers sleep in the same classroom with no mosquito nets to prevent either the black flies or the mosquitoes. The workers are provided with construction uniforms, but they are not given steel toe boots even though they work in a dangerous environment where construction equipments are in constant motion, meanwhile there are big signs on site saying steel toe boots and hard hats are required. Some workers complained that they were not given hard hats either due to shortage in supply and were told to wait, but have not heard from their supervisors yet about when hard hats will be provided.

On the other hand, the Chinese and BPA employees sleep in mobile homes on site provided by Sino Hydro and equipped with air condition units in each room to

prevent the survival of the mosquitoes and black flies in their rooms. Two people sleep in one room and the rooms are all hooked up with high-speed Internet. The Ghanaian Sino Hydro workers are not offered any kind of health insurance to cater for their health in case they get sick, meanwhile BPA employees are members of the National Health Insurance Scheme Program in the country. Below is a signpost on site cautioning people to wear safety helmets and steel toe boots


### 5.5.4 Chinese Labor Administration and Bui Dam:

As mentioned above, the Bui contract created two different umbrella organizations on the same project site. They are the Bui Power Authority with its employees on the payroll of the Government of Ghana through the BPA and there is Sino Hydro,

which manages all the hiring and administration of both local Ghanaian workers and Chinese workers undertaking the construction project. Sino Hydro's managing of the Ghanaian worker is not being monitored directly by any external body either local or international, which gives them the opportunity to run the site using their own labor standards as described above. The BPA staff working directly with Sino Hydro on site are not involved in any form of labor negotiation or activity regarding the Ghanaian workers employed by Sino Hydro, even though the BPA are the best agency and in the best position to conduct some form of monitoring of Sino Hydro labor standards, given that both work and live on the same project site.

A study conducted on the impact of ethnic Chinese network on bilateral trade established the idea that coethnic networks can promote international trade by providing community enforcement sanctions that deter violations of contracts in a weak international environment.[105] Rauch and Trindade also stated that according to Weidenbaum and Hughes (1996) report "if a business owner violates an agreement, he is black listed. The above is far worse than being sued, because the entire Chinese network will refrain from doing business with the guilty party."[106] However the above strategy is missing in recent Chinese international behavior in the global labor market, especially within development projects undertaken by the Chinese in Sub Saharan Africa. China's strategic bilateral relationship on the African

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[105] See James E. Rauch and Vitor Trindade (February 2002): Ethnic Chinese Networks in International Trade.
[106] See James E. Rauch and Vitor Trindade (February 2002): Ethnic Chinese Networks in International Trade.

continent has started attracting a lot of criticism due their style of negotiation and the labor issues encountered in most African countries where there is Chinese involvement in a project.

In 2005 the explosion in a Chambishi copper mine, which killed at least 50 workers was blamed on the Chinese owners for ignoring basic safety regulations leading the anti-Chinese sentiment in Zambia.[107] In 2004 there was a massive protest against Chinese infiltration in Dakar, Senegal with some protesters calling for the president of the country to kick the Chinese out of the country and both Nigeria and Angola cancelled contracts worth billions of dollars with China. These were all due lack of transparency that the Chinese use in handling their negotiations and conducting business on the African content. A Chinese engineer in charge of building the Imboulou dam in Congo went to the extent of asking the Congolese government to make prisoners available to him so he could be sure his workers would not flee,[108] because regular Congolese workers would not stay longer than a few months because of the poor working conditions and wages.

In the 19th century, Chinese immigrants working in the United States brought cases of abuse and unfair treatment against residents of Montana to the courts of Montana in the 19th century when the Chinese migrated to work in the Montana mines. According to Wunder, "Their only protection was the law. Believing that an appeal

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[107] Serge Michel (May 2008): Foreign Policy. www.foreignpolicy.com/chinainafrica
[108] See Serge Michel (May 2008): Foreign Policy. www.foreignpolicy.com/chinainafrica

to reasonable men and heritage of common law might make a difference, Chinese victims of abuse and discrimination brought their complaints before Montana courts and hoped for decisions in their favor."[109] The court, between the late 1860s until the first passage of a federal statute limiting Chinese immigration in 1882, listened to Chinese complaints, recognized their seriousness and judged them equitably.[110] The Chinese are using their financial capacity to abuse Ghanaians working for them on the Bui project in Ghana, and no monitoring agency has taken on the task to regulate their activities including the government of Ghana. Below in figure 5.7 is a picture that I took of young Ghanaian men lining up to apply for three security positions that became available during one of my visits to site.

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[109] See John R. Wunder (Summer 1980): Law and Chinese in Frontier Montana
[110] See John R. Wunder (Summer 1980): Law and Chinese in Frontier Montana

**Figure 5.7 Job application center at Bui dam site**


## 5.6 Alternative Sources of Energy

The idea to build a hydroelectric dam at Bui started in the 1920s after Sir Albert Kitson a geologist discovered the site, since then the government of Ghana has contracted different energy companies in the world to conduct feasibility about the possibility of building a hydroelectric dam at Bui. Studies by Sir William Halcrow and Partners were conducted in 1956, followed by another hydro project study in 1964 by a USSR firm, and in 1976 the government of Ghana contracted Snowy Mountains Engineering Corporation (SMEC) of Australia to conduct another

feasibility study of the Bui dam site. In 1985 the Ghana Generation Planning Study conducted a construction cost estimate study, followed by a feasibility update study performed by Coyne et Bellier in 1995 and cost estimate study by the same company in 2006 before the decision to build the dam was made in 2007.
The government of Ghana did not consider other alternative sources of energy such as thermal, wind or solar because so much had been invested in the Bui site since 1920s. The government's reluctance to conduct further alternative research was based on the fact that Bui was the best source of power generation to support Ghana's economic development based on job creation, security of supply and lower carbon dioxide emissions.[111] According to the Energy Commission, no other alternative locations in Ghana have been identified.

### 5.7 Impact on Ghana – China Relationship

Ghana is just like any other poor Sub Saharan African country plagued with poverty and corruption since independence. The government of Ghana is desperate to lift the country out of the current undesirable economic situation through the implementation of development projects like dams, roads, stadiums and housing. In an effort to meet the above challenges the government of Ghana developed a bilateral or "South-South" relationship with China to undertake big development project in the country, mainly because of China's financial capability to loan millions

[111] Ministry of Energy, Ghana

of dollars and invest in development projects in Sub Saharan Africa without the involvement of other international financial Institutions like the World Bank, IFC and IMF.[112] As of 2008, China's main source of foreign investment funds, known as the Export-Import Bank of China, planned to spend $20 billion in Africa in the next three years, which is roughly equal to the amount the entire World Bank group expects to spend on the continent in the same period.[113] The investments by China in Africa has led to the open door policy by most Sub Saharan African countries with China, whereby the Chinese are allowed to invest in any sector of the African economy that is beneficial to the Chinese in exchange for building schools and roads in Africa.

Most African leaders have concluded that the "South to South" relationship between their countries and China produces a win-win outcome for both countries. During the sod cutting ceremony at Bui, the Ghanaian Minister of Energy was quoted saying *"Mr. Chairman, your Excellency, as for the President and members of Sino Hydro Corporation team, I would like to say that the negotiations were tough but both sides worked with a spirit of give and take to make the Engineering, Procurement and Construction Contract a win-win contract. This spirit has brought us together as one family and I am very certain that this relation would be maintained during the*

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[112] International Monetary Fund

[113] See Serge Michel (June 2008), When China Met Africa: Foreign Policy. www.foreignpolicy.com/extras/chinainafrica

*development phase. We particularly thank them for their hospitality to us in China To all our friends from China, I say in Chinese, Nihao (Hello), Huan Ying (Welcome) and Xie Xie (Thank you).*" The above quote from the Ghanaian energy minister's speech clearly suggest that Ghana is willing to engage in any form of development partnership with China no matter the cost to Ghana. The minister's argument that the Bui dam contract with China is a win-win contract cannot be proven to the ordinary citizen, especially if both the Chinese and the Ghanaian officials have withheld the "EPC Turnkey Contractual Agreement between Ghana and China on the Bui Dam." The lack access to the Bui agreement by the public makes it impossible for an independent body to analyze the document and make the facts known to the public, and until that is achieved it will be premature to claim that the contract was a win-win, just like the Bujagali Dam in Uganda when the independent studies by Prayas Energy Group of India revealed that Uganda will be making excessive payments of $20 million each year if the dam moves under the planned contract with AES Corporation.

Part of the $1 billion contract signed between Ghana and China will be used to establish a Chinese language department at the University of Ghana, which is a good investment given the advantage of being bilingual in the current global world. But in Brazzaville-Congo elite schools, Chinese has replaced English and French as the

language to learn.[114] Hence, is the investment by the Chinese to open a Chinese language department in Ghana an effort to put Ghana on the same path as Congo-Brazzaville? In Congo and Angola, the Chinese are gaining access to oil, copper, uranium, cobalt and wood that will fuel China's booming industrial revolution while these African countries get school, roads and other development projects. According to Huang Zequan, vice president of the Chinese-African People's Friendship Association, there are now 550,000 Chinese nationals in Africa, compared with 100,000 French citizens and 70,000 Americans. While some Chinese were sent by Beijing to build dams and railroads, other Chinese simply hope to get rich in some on the poorest countries in Africa.[115] Africa has become the goldmine for China in the 21st century. As a result, they are motivated to be major players in all the development projects taking place on the African continent by financing and engaging in projects like the Bui dam development in Ghana, airport and apartment buildings in Brazzaville, factories in Lagos, 750 mile highway in Algeria and railways in Zaire. The African leaders have not hesitated to handover responsibilities of public office to China, since these leaders turn to China if they want schools or hospitals which often happens just before elections in order to gain as much profit as possible from these projects.

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[114] See Serge Michel (June 2008), When China Met Africa: Foreign Policy. www.foreignpolicy.com/extras/chinainafrica

[115] See Serge Michel (June 2008), When China Met Africa: Foreign Policy. www.foreignpolicy.com/extras/chinainafrica

The Congolese (Brazzaville) Minister for Construction and Housing Claude Alphonse N'Silou was also quoted in an interview with Serge Michel praising the Chinese for building a dam in Imboulou and the minister's house, a Greco-Roman palace which the minister claims, makes the US Embassy look like a small bunker. He also said, *"Settled! It's win-win! Too bad for you, in the West, but the Chinese are fantastic."* An advisor to the Algerian Minister of Public Works, Omar Oukil was also quoted saying, *"The Chinese are incredible, they work around the clock, seven days a week. It would be good for us to if a little bit of their rigorous work culture rubbed off on us."*[116] Suggesting a strong "South to South" relationship between Sub Saharan African and China, but stories coming from the African continent has proven time and again that the development partnership has always resulted in a win-loss outcome with the African countries mostly on the losing end.

The above win-loss results has already led to a breakdown in the South-South relationship between China and some Sub Saharan African countries, as these countries begin the realize that the Chinese have always been the major beneficiaries of the relationship as tension continue to mount between the two partners. For example, Angola a country known as China's spectacular success in Africa is beginning to question China's commitment to the country, especially when the Chinese promised in September 2007 to rebuild the railway connecting the

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[116] See Serge Michel (June 2008), When China Met Africa: Foreign Policy. www.foreignpolicy.com/extras/chinainafrica

coastal city of Lobito with Zaire destroyed during the war, but rather ended up dismantling the railway line and left with everything. The assistant director of Benguela Railway Company in Lobito confirmed that 16 Chinese camps were dismantled and a $2 billion contract between the 2 countries was cancelled, but claimed he knew nothing else since the negotiations took place at a very high level.[117] The Angolans canceled a $3 billion contract for oil refinery in Lobito, and $2 billion allegedly disappeared into Chinese accounts. Meanwhile in April 2006, Nigeria canceled an agreement in which the Chinese would have paid $2 billion for first access to four oil blocks, and Guinea called off a billion-dollar financial package with China, involving a bauxite mine, and aluminum refinery and a hydroelectric dam.[118] Further proving that the partnership between China and its Sub Saharan African counterparts does not represent the smooth development discourse that Sub Saharan African leaders actually need to lift their countries out of economic poverty, but the difficult access to documents on these negotiations has made it difficult to determine the actual cost – benefit of these "South-South" relationship.

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[117] See Serge Michel (June 2008), When China Met Africa: Foreign Policy. www.foreignpolicy.com/extras/chinainafrica

[118] See Serge Michel (June 2008), When China Met Africa: Foreign Policy. www.foreignpolicy.com/extras/chinainafrica

## Chapter Six

## Conclusion, Implications and Recommendations

Having analyzed the ongoing Bui dam as a development project that is being undertaking under the "South to South" relationship between China and Ghana, and how it plays into the development discourse of Ghana and other Sub Saharan African countries, this chapter presents the conclusion of the study, implications on Ghana, specific recommendations and potential areas of further research.

### 6.1 Conclusion and Implications

The fact that the Bui dam construction that began in 2007 and is an ongoing project to be completed in 2012 makes it impossible for any research on the dam to draw a definitive conclusion about the outcome of the project now. However, it creates the opportunity to study the entire lifecycle of the project, and this can help policy makers to re-evaluate their decisions about some aspects of the project. The study showed that the Ghanaian authorities and Sino Hydro are prepared to effectively address the issue of displacement and resettlement even though their strategy is very slow. The pragmatic way in which the Bui Power Authority and Sino Hydro quickly resettled the immediate villages that will be affected as a result of the construction, and the provision of concrete houses as compared to the mud houses that the displaced residents were living in, is an example of a how the government of Ghana is serious about not repeating the mistakes of the Akosombo dam. The resettled villagers were also provided with infrastructure like borehole to provide

good drinking water, toilets, schools and high nutrient land for farming, most residents interviewed mutually approved of the new farmland.

The government of Ghana also addressed the issue of migrants in the Bui dam area effectively by acquiring land from the Gyama traditional council to resettle the affected migrants; the land used for the resettlement site now belongs to the government of Ghana. Meaning the migrants are better secured on the resettlement site since they do not have to worry about the Gyama traditional council claiming the land in the future, which used to be the situation that the migrants were experiencing prior to the construction of the dam. There are more resettlements to be conducted in the future especially in the outer years of the project, which makes it premature to state that the overall resettlement exercise was successful. But given the initial approach adopted, it can be concluded that if the Bui Power Authority continues with the same methodology the overall resettlement exercise will be successful.

Ineffective planning processes in big development projects have always led to either failure of project or "nimbyism" from the public, pressure groups, advocacy groups and Non Governmental Organizations. An example is how the Internationals Rivers Network with the help of other advocacy groups pressured the World Bank to pull out of its $215 million political risk guarantee for the Bujagali dam in Uganda,[119] due

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[119] See Harvard Business School Case No 204 – 083: International Rivers Network and the Bujagali Dam Project

to the ineffective planning adopted by Museveni's government. The Ghanaian government, after learning from other controversial dam projects and the Akosombo dam, decided to undertake a participatory planning approach during the design stages of the project by hiring Environmental Resources Management an independent agency to conduct the Environment and Social Impact Assessment study. Student experts were also hired to conduct social surveys in the Bui dam area on the residents to be impacted by the dam and the survey results were used to guide the recommendation made by the ESIA report on the project. The public hearings held in Accra and the local communities of Bui to inform the public about the project and also listen to their opinion and integrate them into the project was also a very effective approach by the government to address the dam related problems. It should be noted that the Bui project was being financed by the Export Import Bank of China and constructed by Sino Hydro a Chinese company; hence none of the countries involved had the obligation to use IFC and World Bank standards to guide the planning of the Bui dam project since these institutions were not financing the project. But the Ghana government actually used the guidelines and policies of the World Bank and IFC during the planning process to guide the project.

Though the Bui Power Authority and the Sino Hydro took a pragmatic approach to address issues of resettlement, displacement and the planning process, the study has shown that they failed to exhibit the same level of capacity in other important areas of the project. It can be concluded that the Ghanaian government failed to

regulate and monitor labor issues on site by leaving it to the Chinese to handle, which suggests how the Ghana government and leaders in other African countries are willing to leave their offices for the Chinese to control in exchange for a development project. The Chinese are known to abuse labor standards in their own country, hence it was a miscalculated move to allow them to manage labor issues in Ghana where Ghanaians are the employees, without any form local monitoring agency to oversee or inspect working conditions on the dam site. The classified nature of the Bui dam agreement has also compounded the labor problem since nobody knows whether the contract deliberately allowed the Chinese to manage labor issues, which is why the Ghanaian government is being silent on the topic or it is the lack of technical and financial capacity that is preventing the Ghanaian Labor Agency to intervene on the matter.

It can also be concluded that the environmental problems to be caused by the construction of the dam are not being acted upon in an adequate manner, especially the Bui National Park and the hippo pools that will be inundated by the reservoir. It is arguable that the project is in its second year. The authorities in charge should be given time to act at their own pace but I believe wasting time to act on the environment is a bad idea, especially given the impact that the dam is going to have on the Bui National Park by inundating 21% of the park and flooding all the 13 hippo pools. The best time to save these endangered species reported in the ESIA report is now, while the dam construction is ongoing rather than wait until the reservoir is being flooded before acting. Secondly both the Ghana Wildlife Division

and the Environmental Protection Agency of Ghana does not have the technical, human and financial capacity to effectively address the problems of the park alone. The Wildlife Division prior to the Bui dam construction could not even keep up with the illegal hunting and tree cutting that was going on in the park by residents of the Bui area, which makes me wonder how they will be able to address these big flooding issues without help from an external body or agency.

The financial section of the study also concludes that the Electricity Company of Ghana (ECG) will be locked into a Power Purchase Agreement (PPA), which might not be profitable to the company. The ECG is the distribution company in charge of selling electricity to customers in the country, hence the mandatory nature of the Bui contract that requires ECG to exclusively purchase power generated from the Bui dam does not give ECG the ability to shop for other cheaper alternative energy supply from Cote d'Ivoire. The above implies that if cost of electricity generation goes up at Bui dam the authorities or the Chinese will sell energy to ECG at a higher price, since the current PPA agreement in the contract is not fixed and can be adjusted up at anytime by Bui. A higher power purchase price will result in ECG passing the higher price unto the consumer if they are operating on a full cost recovery basis because they have monopoly power in the electricity supply sector in the country. However if the government is subsidizing the ECG, then an increase in power purchase means the government will have to divert resources meant to develop other sectors of the economy to subsidize electricity distribution to customers, ignoring other sectors of the economy that need adequate investment. In

the long run it is the customers or the citizens of Ghana that will be victims of the Bui contractual agreement that has mandated ECG to buy all the energy produced by the Bui dam and the Chinese will continue to enjoy their high cash flow stream, since any attempt by the ECG not to purchase energy from Bui due to low purchase rates elsewhere will lead to a breach in contract which can negatively impact the relationship if the two countries.

The Cocoa Sales Agreement (CSA) mandates the Ghana Cocoa Board to allocate 30,000 tons of cocoa beans to Genertec International Corporation of Beijing per every crop year for 20 years to service part of the debt owed to China, this will have serious implications on Ghana's foreign currency reserve. Ghana relies on cocoa export as one of its main sources of national income hence allocating the above quantity of cocoa to the Chinese for 20 years will cut deep into Ghana's source of revenue. Also if the price of cocoa on the world market is above the price that China is paying for each ton of cocoa allocated to Genertec (China) each year then Ghana will be economically better off selling its cocoa beans on the world market and use the cash obtained to service the debt from the Bui loan. However the contract has already been signed and information regarding the price that China will be paying for each ton of cocoa has been classified, leaving the Ghanaian public to be victims of the negotiations especially if the deal actual benefits the Chinese and not the Ghanaians.

### 6.2 Specific Recommendations

The government of Ghana and Sino Hydro made a good effort in addressing the displacement and resettlement problems that will be posed by the dam; however settling human beings alone does not solve the threat of the Bui dam project. Since the government of Ghana applied the World Bank and International Finance Corporation's rules and policies to the planning process, it is necessary that the government also applies the International Labor Organization's (ILO) rules, Ghanaian Labor rules and World Trade Organization laws to the workers on the Bui dam project to help prevent the harsh labor conditions being enforced by the Chinese to the Ghanaian workers on site.

The Ghanaian government should also set up a separate comprehensive hippopotamus action plan committee, to create an effective strategy to help the Ghana Wildlife Division to relocate all the hippos and other endangered species a before the dam is completed. The above committee should be an independent body made up of NGOs, people from academia, planners and international organizations with financial support from the government for relocation of the animals. Government of Ghana should also allocate more money towards the effort to save the endangered species by making the issue a matter of national security, instead concentrating its entire effort of getting the dam built to generate electricity.

The diversion of the youth from agriculture to working on the Bui dam project is a national food security issue given the long-term effect on food production in the

country. The government needs to take steps to address the above issue, by investing more of the country's budget into the agriculture sector and providing farmers with modern agricultural tools and training, providing farmers with high yielding seeds, fertilizers at affordable prices, building storage facilities to store excess farm products in order to save the agricultural sector. Building access roads to rural communities that supply the country's food will enable market women to go to these areas to buy the farm products and transport them to the cities, which will put money into the pockets of these farmers to enable the stay in the farming sector. If the problems of farming are not addressed now, more of the youth will leave the farm to work on the dam and other sectors of the economy and food prices will skyrocket as a result of the shortage.

The government of Ghana should be transparent with big development contracts in the future by opening up the bidding process, since this will help create a healthy competition and also result in careful negotiation of projects that will actually result in a win-win situation and desist from the idea of close door negotiation. It will also be helpful if the government of Ghana can make the Bui dam turnkey and contractual agreement accessible to public so the independent agencies and people in academia can conduct their own evaluation and make non binding recommendations, since these independent evaluations are capable of capturing certain relevant information that will help future negotiations.

The lack of willingness by the two countries to share information such as the Turnkey Contractual Agreement between Ghana and China on the Bui Dam Project, has made it difficult for independent organizations like NGOs, Local Community Groups, Pressure Groups, International Labor Organizations and other Foreign countries to know the details of the Bui contract and other contract projects in the country. Which makes it difficult to determine whether the Chinese are violating contract details or the actual contract signed gave them the mandate to violate workers rights. It thus necessary for transnational advocacy groups, NGOs and local pressure groups to put pressure on the Ghanaian government and parliament to make these documents public, in order to enable independent organizations to evaluate the documents and make recommendations where it is determined that the contract does not favor the Ghanaian worker. Just like how the release of the Bujagali dam contract details by the Ugandan government, enabled Prayas Energy Group of India an independent company to analyze the Power Purchase Agreement (PPA) of the project and demonstrated that Uganda will be faced with an average of $20 million in excessive payments each year if the dam moves forward under the current contract.[120] The above approach will promote transparency in all negotiations that the government of Ghana undertakes with foreign counterparts and also lead to effective results of project, given the fact that independent agencies will be allowed to voice their opinion on projects or government contracts based on actual statistical analysis instead of assumptions.

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[120] See ECA Watch (September 2003): Race to the Bottom, Take II

The absence of financing from other international financial organizations such as the World Bank and the International Financial Corporation also makes it difficult for the Sino Hydro (Chinese) to be held by the accountable to international labor standards by these internationals organizations. Further compounding the problem is the fact that the Ghanaian government's ambition to see the dam built has resulted in the government's lack of interest to address unfair labor conditions on site. China's history of labor abuse makes the situation problematic, which might make if difficult for Chinese courts to hear the case of Ghanaian workers being treated unfairly by a Chinese company in Ghana and rule in favor of the Ghanaian workers. Non Governmental Organizations and local pressure groups need to document stories about the treatment of Ghana workers on site by the Chinese, and make short documentaries that can be published in the media and shown on television networks in Ghana and the rest of the world to bring the situation to light. The exposure of the working conditions at the Bui dam site will force the Ghanaian government to take pragmatic steps to resolve the situation, given that politicians willing to retain power in election will see the risk of losing their seats. The effective international campaign against the Narmada dam in India and the exposure of the damages that it will cause and has already caused influenced the World Bank to withdraw from the project.

The Bui dam contract must be revised to enable the Bui Power Authority to be in charge of recruiting and managing the activities of semi skilled and unskilled Ghanaians employed to work on the project. Giving authority to BPA to organize the

workers means they will be in charge of wages, accommodation, health and safety and working conditions of the workers, while the Chinese will only play supervisory role of the Ghanaian workers. The above will require overhead cost projections to be made within the loan agreement to cater for the upkeep of the workers. Also, because the BPA employees are already living on the same site with the unskilled workers, it will be easy to implement the above strategy without increasing overhead cost, since there will be no need to build and staff a new office on site.

The Fair Labor Standards Act (FLSA) regulates minimum wages, maximum hours and child labor, making employers liable to their employees for violations of the Act. A substantial number of employers, however, particularly in labor – intensive industries, persistently violate these regulations or standards.[121] But how will these labor standards be ensured in the Bui dam context, given that it is the Chinese that are in charge of constructing the dam? Ghana's labor office can be used to ensure that the above standards are enforced on site, but the office lacks the technical and human capacity needed to undertake effective monitoring of work places in the country, which has left the Chinese to unfairly treat the Ghanaian workers. The presence of BPA employees on site, conducting quality control and overall technical monitoring of the project can be used as a leverage by the Ghanaian government to recruit labor monitoring officers as affiliates of BPA to inspect and monitor how the Chinese manage labor activities on site. But this can be achieved only if there is the

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[121] Leo L. Lam (December 1992), Designer Duty: Extending Liability to Manufacturers for Violations of Labor Standards in Garment Industry Sweatshops.

political willingness by the government to ensure fair labor treatment on site, which is currently lacking.

Local pressure groups and NGOs can assist the abused workers collect data and evidence about the labor issues on site and take Sino Hydro (Chinese) to Ghanaian courts to appeal their cases. Although there is evidence that the government has compromised courts in Ghana and hence the courts tend to rule in favor of the Ghanaian government, there is also evidence of individuals winning some lawsuits brought against the government in the country. The Bui workers with the help of independent organizations can bring lawsuits against Sino Hydro and fight for good working conditions.

### 6.2.1 Monitoring Approach

In order to ensure that the above approach to labor works effectively, the government of Ghana must show its willingness to make information available through the freedom of information act. This bill was introduced to the Ghanaian parliament several times but it gets nowhere on the floor during debates, simply because of the government's unwillingness to make access to information in the country public. If the above bill is introduced and passes, it will enable all individuals to seek any information that they want from the government such as turnkey contracts, concession contracts and employment contracts without any red tape and bureaucracy blocking their access. The freedom of information act bill, if passed will ensure government officials negotiating contracts on behalf the country

recruit qualified people with adequate technical capacity and understanding needed to close deals on contracts, which will lead to positive and profitable outcomes on the country's economy.

The road to the Bui dam site is very rough and dangerous to navigate making it difficult for radio stations, NGOs, pressure groups and the Media houses based in the Capital city of Accra to monitor and update the general public about the conditions on the dam site through their network channels. To make the above recommendations effective, there is the need for the organizations mentioned above to recruit local residents in the Bui area and make them their point of contact with the rest of the world, by giving them the task to investigate and pass on information to the Accra based organizations to publish and broadcast. The above monitoring strategy will have a big impact on the way the Chinese handle labor situation on site, because they are aware of the resentment by some part of the population in Ghana and other countries in Sub Saharan Africa countries and do not want to worsen the situation. The Chief engineer of Sino Hydro, Mr. Lu specifically told me at their head office in Accra that I should write something good about the project when he realized that it was the research was for my thesis. He asked me to that because he had started feeling the resentment being shown by Ghanaians in the country about the project. Hence, a weekly update about working conditions on television and radio will force Sino Hydro change its course.

Last but not the least, hydroelectric dams are not sustainable in energy generation over the long-term due to their vulnerability to siltation and changes in rainfall pattern that affects the level of water in the reservoir needed for electricity generation. I will thus ask the government of Ghana to start researching into the possibility of other sources of energy, so that the country does not find itself relying entirely on hydroelectric power in the future because doing so will force the country to build another dam if the Bui dam fail to sustain the demand capacity in the future.

### 6.3 Areas of Further Research

There are a lot of areas to be studied about the Bui dam and the entire China–Africa relationship and the impact that it has on both parties. An area that needs attention on the Bui dam project is the labor issues on the site, a lot of labor related issues have been studied regarding global supply chain companies and how they operate in host nations, but the Bui dam labor problems can be studied by trying to understand why two different agencies the BPA and Sino Hydro are operating on the same project, meanwhile the elite Ghanaian are being managed by the government and the non elite or unskilled Ghanaian are being managed Sino hydro (the Chinese), and what is the motivation behind that sort of separation. It has also been repeated in recent literature that the Chinese are using prisoners from China to do the construction works in Sub Saharan Africa, hence it is necessary to study the reasons behind their strategy and the impact that it will have on local people. The Bui dam itself is an ongoing project, so follow up research about how the Bui National Park was finally handled and which stakeholders played major roles in the

process is needed to draw an overall conclusion about the dam project. Follow up research can also be conducted about how the rest of the resettlement exercise took place and how the displaced residents define their current conditions, living in the shadows of the new dam after the floods compared to their conditions prior to the dam construction. The influx of the Chinese into the Sub Saharan African continent to engage in aggressive development projects, is an emerging topic that needs to be researched to properly understand the motive behind this "South to South" relationship and also help make recommendation on the way forward about the above relationship to the African countries. Since the only way to ensure a better outcome from the African development relationship with China is by having the capacity to negotiate win-win contracts and not just contracts to build some roads and schools, while trading off valuable resources to the Chinese.

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An exempt species may only be hunted, captured or destroyed by a Ghanaian citizen for use by himself or his dependents, and may not be traded except with a wildlife trade permit.

The draft Wildlife Act (2005) also states that animals not listed in Schedules I and II are categorised as "partially protected" animals throughout Ghana.

*Table H1.5 Species of Conservation Concern Recorded Within the Study Area*

| Scientific Name | Common Name | Ghana | IUCN | CITES |
|---|---|---|---|---|
| *HERPETOFAUNA* | | | | |
| *Varanus nilotocus* | Nile Monitor | Schedule I | | Appendix II |
| *Varanus exanthematicus* | Savanna Monitor | | | Appendix II |
| *Python regius* | Royal Python | | | Appendix II |
| *Python sebae* | African Python | | | Appendix II |
| *Crocodylus niloticus* | Nile Crocodile | Schedule I | VU | |
| *Crocodylus cataphractus* | Slender-snouted Crocodile | Schedule I | DD | |
| *Osteolaemus tetraspis* | Dwarf Crocodile | Schedule I | VU | |
| *SMALL MAMMALS* | | | | |
| *Thrynonomys swinderianus* | Grasscutter | Schedule II | | |
| *Cricetomys gambianus* | Gambian Giant Rat | Schedule II | | |
| *BIRDS* | | | | |
| *Falco naumanni* | Lesser Kestrel | Schedule I | VU | |
| *Cisticola guinea* | Dorst's Cisticola | | DD | |
| *Aviceda cuculoides* | African Cuckoo Hawk | Schedule I | | |
| *Macheiramphus alcinus* | Bat Hawk | Schedule I | | |
| *Polyboroides typus* | African Harrier Hawk | Schedule I | | |
| *Gypohierax angolensis* | Palm-nut Vulture | Schedule I | | |
| *Gyps africanus* | White-backed Vulture | Schedule I | | |
| *Trigonoceps occipitalis* | White-headed Vulture | Schedule I | | |
| *Circaetus cinereus* | Brown Snake Eagle | Schedule I | | |
| *Aquila wahlbergi* | Wahlberg's Eagle | Schedule I | | |
| *Hieraaetus spilogaster* | African Hawk Eagle | Schedule I | | |
| *Polemaetus bellicosus* | Martial Eagle | Schedule I | | |
| *Butastur rufipennis* | Grasshopper Buzzard | Schedule I | | |
| *Kaupifalco monogrammicus* | Lizard Buzzard | Schedule I | | |
| *Buteo auguralis* | Red-necked Buzzard | Schedule I | | |
| *Falco alopex* | Fox Kestrel | Schedule I | | |
| *Falco ardosiaceus* | Grey Kestrel | Schedule I | | |
| *Tyto alba* | Barn Owl | Schedule I | | |
| *Otus senegalensis* | African Scops Owl | Schedule I | | |
| *Otus (Ptilopsis) leucotis* | N. White-faced Owl | Schedule I | | |
| *Bubo africanus cinerascens* | Spotted Eagle Owl | Schedule I | | |
| *Bubo lacteus* | Verreaux's Eagle Owl | Schedule I | | |
| *Scotopelia peli* | Pel's Fishing Owl | Schedule I | | |
| *Glaucidium perlatum* | Pearl-spotted Owlet | Schedule I | | |
| *Glaucidium capense.* | Barred Owlet | Schedule I | | |
| *Strix woodfordii* | Wood Owl | Schedule I | | |
| *Bubulcus ibis.* | Cattle Egret | Schedule I | | |
| *Egretta garzetta* | Little Egret | Schedule I | | |
| *Nycticorax nycticorax* | Black-crowned Night Heron | Schedule I | | |
| *Gorsachius leuconotus* | White-backed Night Heron | Schedule I | | |
| *Ardeola ralloides* | Squacco Heron | Schedule I | | |
| *Butorides striata* | Green-backed Heron | Schedule I | | |

| Scientific Name | Common Name | Ghana | IUCN | CITES |
|---|---|---|---|---|
| *Ardea cinerea* | Grey Heron | Schedule I | | |
| *Scopus umbretta* | Hamerkop | Schedule I | | |
| *Eupodotis melanogaster* | Black-bellied Bustard | Schedule I | | |
| *Poicephalus robustus* | Brown-necked Parrot | Schedule I | | |
| *Poicephalus senegalus* | Senegal Parrot | Schedule I | | |
| *LARGE MAMMALS* | | | | |
| *Colobus polykomos* | Black-white Colubus | Schedule I | LR/nt | Appendix II |
| *Cercopithecus mona* | Mona Monkey | Schedule I | | Appendix II |
| *Cercopithecus petaurista* | Spot-nosed Monkey | Schedule I | | Appendix II |
| *Crcopithecuss aethiops* | Green Monkey | | | Appendix II |
| *Erythrocebus patas* | Patas (Red) Monkey | | | Appendix II |
| *Cercocebus torquatos* | White-crown Mangabey | | LR/nt | Appendix II |
| *Papio cynocephalus* | Baboon | | | Appendix II |
| *Galago senegalensis* | Senegal Galago/Bushbaby | Schedule I | | Appendix II |
| *Galagoides demidoff* | Demidoff's Galago | Schedule I | | Appendix II |
| *Mellivora capensis* | Honey badger/ ratel | Schedule I | | Appendix III |
| *Galerella* | Slender Mongoose | | | Appendix III |
| *Crossarchus obscurus* | Cusimanse | | | Appendix III |
| *Mungos gambianus* | Gambian Mongoose | | | Appendix III |
| *Atilax paludinosus* | Marsh Mongoose | | | Appendix III |
| *Civettictis civetta* | African Civet | | | Appendix III |
| *Profelis aurata* | Golden Cat | Schedule I | VU | Appendix II |
| *Panthera pardus* | Leopard | Schedule I | | Appendix I |
| *Phataginus tricuspis* | Tree Pangolin | Schedule I | | Appendix II |
| *Uromanis tetradactyla* | Long-tailed Pangolin | Schedule I | | Appendix II |
| *Smutsia gigantean* | Giant Pangolin | Schedule I | | Appendix II |
| *Orycteropus afer* | Aardvark | Schedule I | | |
| *Hippopotamus amphibus* | Hippopotamus | Schedule I | | Appendix II |
| *Syncercus caffer nanus* | African Buffulo | Schedule I | LR/cd | |
| *Cephalophus dorsalis* | Bay Duiker | Schedule I | LR/nt | Appendix II |
| *Cephalophus niger* | Black Duiker | Schedule I | LR/nt | |
| *Cephalophus rufilatus* | Red-flanked Duiker | | LR/cd | |
| *Cephalophus silvicultor* | Yellow-backed Duiker | Schedule I | LR/nt | |
| *Alcelaphus buselaphus* | Hartebeest | | LR/cd | |
| *Kobus kob* | Kob | | LR/cd | |
| *Kobus ellipsiprymnus* | Waterbuck | Schedule I | LR/cd | |
| *Redunca redunca* | Bohor Reedbuck | Schedule I | LR/cd | |
| *Hippotragus equinus* | Roan Antelope | Schedule I | LR/cd | |
| *Neotragus pygmaeus* | Royal Antelope | | LR/nt | |
| *Ourebia ourebi* | Oribi | Schedule I | | |