Safeguards, Financing and Employment in Chinese Infrastructure Projects in Africa's Water Sector: The Case of Ghana's Bui Dam

ABSTRACT

Chinese players are now Africa's key partner for its infrastructure sector (including water supply projects), providing approximately two-third of investments since 2007. The social impacts of these engagements during the construction phase are mostly portrayed in an alarmist tone within the popular press. Meanwhile, scholarly literature investigating them remains scarce. We draw on the Bui Dam, a major dam in Ghana, financed by China Exim Bank (CEB), the largest financier of infrastructure in Africa, and constructed by Sinohydro, the largest dam developer worldwide, as a case study to explore social impacts of Chinese engagements in the African water sector. We particularly examine social safeguards policies from the perspective of Chinese players, the financing modalities and the dam's impacts on the local labor market. We find that social safeguards policies were not within the responsibility of Sinohydro. Furthermore, financing modalities were largely favorable from a Ghanaian perspective, comparable to World Bank conditions, partly due to the successful negotiations (from the Ghanaian standpoint) during the planning and design phase of the project. Most likely, the project would not have been implemented if CEB had not stepped in to provide funding. Lastly, we find that most workers employed during construction were Ghanaian, paid significantly above the country's minimum wage. Nevertheless, working conditions overall were questionable. This case study highlights how Chinese engagement in construction of water infrastructure may help develop projects otherwise stuck in the planning and design phase. However, labor conditions during the construction phase of these projects need to be carefully managed.

1. INTRODUCTION

Chinese players are now Africa's key partner for its infrastructure sector, providing approximately two-third of total infrastructure investments since 2007 (OECD 2012: 48). Overall, 16% of China's foreign direct investment (FDI) in Africa goes into infrastructure according to the Chinese State Council (2013: 6); 31% of investments go into mining, 20% into finance industry. Within infrastructure, most investments concentrate on the power sector. Chinese investments in water infrastructure ranges from construction of mega-dams, mostly for power generation and irrigation, to water supply and sanitation infrastructure (IHA 2013: 14ff.) (Overall, China only provided 4.2% of Africa's total FDI from 2007 to 2013 (EY 2014: 29)).

Key examples of recent water infrastructure projects carried out by Chinese players in Africa would be the Caxito Irrigation Project in Angola, constructed from 2007 to 2010, irrigating around 32,000 ha of land, the Kuito Water Supply Project in Angola, carried out from 2007 to 2010, supposed to resolve the drinking water shortage of 400,000 citizens in Angola's capital Kuito, as well as the Lotsane Dam in Botswana, constructed from 2009 to 2012, providing potable water for 67,000 citizens (Sinohydro 2015).

Chinese engagements in Africa tend to be portrayed with an alarmist tone in the popular press. For instance, Grammaticas (2012) asks if "China [is] becoming Africa's new colonial master?". On a similar note, the former New York Times journalist French (2014) argues that "China is building a new empire [on the continent]". Chinese firms would supposedly not shoulder responsibilities for the local population (Al Jazeera 2014). Furthermore, allegedly shady deals and loans by Chinese banks would only lure African countries in massive debt build-up (Beattie 2006). Lastly, Chinese projects would not create any jobs for Africans, but would "rely primarily on workers flown in from China" (Hook 2013). Working conditions in Chinese projects are supposedly poor (The Ghanaian Times 2008).

Scholars have started investigating Chinese investments in Africa particularly from an environmental perspective in recent years. For instance, Hensengerth (2012) analyzes the role of international environmental norms in Chinese dam investments in Africa arguing that Chinese players would largely respond to and address them. Meanwhile, Tan-Mullins & Mohan (2012) evaluate corporate social responsibility (CSR) strategies adopted by Chinese state-owned enterprises (SOEs) in Africa and their effectiveness in mitigating environmental impacts. They find that outcomes vary significantly from project to project.

Comparable scholarly literature has not been published yet with a specific focus on the social impacts associated with the construction of water projects (analyzed from the perspective of Chinese players), though. Hence, we intend to start addressing this gap via this paper. We concentrate on those social impacts most frequently discussed in the popular press, namely the social safeguard policies adopted, the project's financing modalities as well as its impacts on the labor market during construction. We examine these using a case study approach, focusing on Ghana's Bui Dam, a major irrigation and power generation dam, to understand how Chinese players implement infrastructure projects. We then consider how these social impacts are relevant across sectors.

We have selected a case study approach as "each large dam is unique: it has its own set of benefits and costs" (Biswas 2012). The case study approach allows accounting for this uniqueness. At the same time, our chosen case study, the largest Chinese investment in Ghana (TUC 2013: 2), may yield maximum external validity. It was constructed by Sinohydro, the world's largest dam developer with a global market share of more than 50% (Verhoeven 2015) and financed by China Exim Bank (CEB), the largest financier of infrastructure in Africa (Le Belzic 2012), including drinking water supply programs.

Hence, lessons learnt regarding this case study may yield insights for a variety of cases across Africa; an in-depth-understanding of the Bui Dam may help practitioners to judge future water infrastructure projects suggested and implemented by Chinese players. Furthermore, it may act as a reference point for future scholars on the topic. Findings outlined in this paper are based upon a set of semi-structured interviews carried out from April to July 2015, a systematic review of reports and the scholarly literature on the topic at hand (including grey literature on the Bui Dam, e. g. Fink (2005) or Otu-Tei (2009)) as well as an holistic examination of relevant news articles. Herein, an advanced Google News Archive search was conducted for this paper (with the keywords "Bui Dam" and Ghana) for the time period January 2006 until May 2015 yielding more than 60 results.

The remainder of this paper is organized as follows. In section 2, we discuss the engagement of Chinese players in the African water sector and introduce the Bui Dam as the chosen case study. In section 3, we analyze the social safeguards policies adopted during the project from the perspective of the Chinese players. In section 4, we discuss the financial modalities of the Bui Dam. Impacts on the local labor market are investigated in section 5. Findings are summarized in section 6.

2. CHINESE ENGAGEMENT IN AFRICA AND GHANA'S BUI DAM

Relations between China and Africa can be traced back to Pharaonic times. Modern Africa-China relations only began to blossom upon the continent's decolonization in the 1950s and 1960s, though (Zeleza 2014). Ever since, infrastructure tended to be a key focus of SOEs in Africa. One of the first infrastructure projects developed by Chinese players was the Tazara railway, completed and handed over to the Zambian government in 1976 (Corkin et al. 2008: 12).

It is one of the key beliefs within China's development policy that infrastructure is a starting point and key accelerator for development. "To end poverty, build a road", a famous Chinese saying states (TUC 2013: 17). This belief may – at least partly – explain China's focus on infrastructure in Africa. Chinese investments in Africa are also driven by commercial reasons and strategic political considerations. China's Going Out Policy, adopted in 2001, encouraged Chinese SOEs to start engaging abroad in order to secure additional profit pools and continue building the Chinese brand (Murphy 2008: 1ff.). Meanwhile, particularly during the Cold War, many infrastructure investments were politically motivated; Chinese leaders hoped to gain Africa's support via these endeavors. Urban et al. (2013) note that Chinese dam projects in Africa pose “a stark contrast to Chinese dams in Africa as electricity export to China is only possible from these Asian countries, whereas other motives such as business opportunities and economic growth are some of the key drivers for Chinese dams in Africa”.

The Bui Dam, a roller compacted concrete (RCC) gravity dam in Ghana, is one key water project developed in recent years in Africa. It also reflects China's broader development policy approach. Built on the Black Volta River in Western Ghana, the Bui Dam is a multi-purpose-dam with the key aims of electricity generation and water supply. The history of the Bui Dam begins in 1925 when its location was first deemed to be promising for a dam. By 1978, plans for the Bui Dam had reached an advanced planning stage, with Australian and World Bank involvement. However, four coups d'états made implementation impossible (Hensengerth 2011: 9). The Bui Dam is now the second largest hydroelectric plant in Ghana with an envisaged capacity of 400 MW, only outpaced by the Akosombo Dam with a capacity of 1,020 MW (Volta River Authority 2015b). Together with the Kpong Dam with a capacity of 160 MW, the Bui Dam and Ghana's Akosombo Dam are Ghana's only hydroelectric power stations. These three power stations together account for more than 50 percent of Ghana's total installed capacity of 2,936 MW (Khalil 2015).

The Bui Dam also comprises an irrigation scheme that is expected to provide water for 30,000 hectares of land, 32 km North East of the dam (WT 2015; Stocks 2014). This area would be equivalent to 7.3% of Ghana's Tain District where the project is located (Tawiah 2015). Assuming an annual average rice yield of 5.75 tons/hectare (rice being the most common crop in Ghana) (FAO 2015) and an average per-capita-rice-consumption of 28 kg/year in Ghana (FAO 2013: 7), the area irrigated by the Bui Dam may be able to feed approximately 6,200 people, 6% of the Tain District's total population, already a significant contribution. More dams may be needed to develop Ghana's agricultural sector and enhance food security, though (Namara et al. 2011: 35f.). Currently, around 100,000 km^2 of the country (42%) is cultivable. However, the currently cultivated area only stands at 11,400 km^2, 11.4% of the cultivable area (FAO 2015).

Plans for implementing the Bui Dam project start were officially announced at the 2006 summit of the Forum on China-Africa Cooperation in Beijing (Hensengerth 2011: 11). Indeed, the project was one of the first major investments undertaken by Chinese SOEs in Ghana. Following the Bui Dam, Ghana signed a USD 3 billion deal with China Development Bank (CDB) in 2010 to develop the country's oil and gas infrastructure as well as a USD 10 billion deal with CEB to develop Ghana's roads, railways, schools and hospitals (Verma 2011).

Upon the 2013 commissioning of the dam, approximately 450 km^2 of the Bui National Park was inundated (25% of the park's total area). Overall, the government acquired 1,794 km^2 of land for the project. Most of the land purchased was only sparsely populated (Duodu 2008). Eventually, 1,216 people in 7 communities needed to be relocated (Interview T27052015).

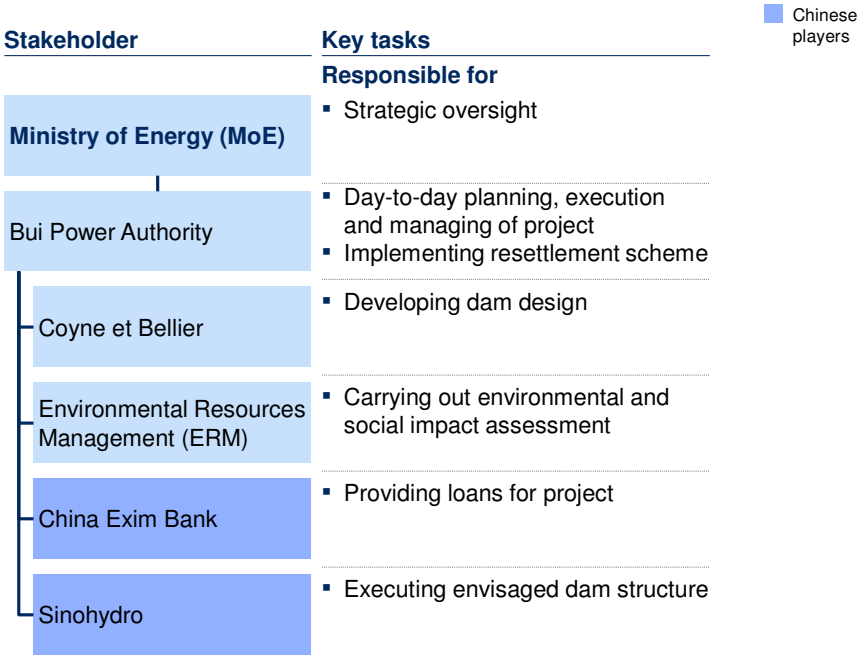
3. SOCIAL SAFEGUARDS POLICIES FROM THE PERSPECTIVE OF CHINESE PLAYERS

A key criticism of the Chinese players in Africa is the lack of social safeguards. Whereas the World Bank's safeguard policies "are aspirational for [Sinohydro], at the project level, local laws and regulations form the basic safeguards" for the company (International Rivers 2014: 2). In many developing markets, these local laws and regulations are underdeveloped, frequently even non-existent, as also acknowledged by a Chinese dam developer (Interview T18072015a). For the Bui Dam, one of the criticisms – from a social safeguard perspective – promoted by Sutcliffe (2009: 2f.) is the lack of an appropriate consultation process during the construction of the Bui Dam: "None of the people […] had any idea of when they were to be resettled, when they could expect compensation or how to make their

grievances known". She conveys the impression this lack of consultation may be due to Sinohydro. "[The] evidence suggests […] that consultation and participation has been kept to a minimum level so that construction can run as smoothly as possible." However, for the Bui Dam there is evidence that a range of stakeholders and the communities were engaged in consultation, and further that it was not the role of Sinohydro to engage in the consultation and design social safeguards. This finding regarding roles and responsibilities of Sinohydro in dam projects is echoed by scholars investigating Chinese dam projects in the Mekong River Basin (Matthews & Motta 2013: 5).

Fink (2005: 87ff.) identified about 60 relevant players involved in the Bui Dam project. Our mapping of stakeholder responsibilities (Figure 1) suggests that 6 players were key to its construction: Ghana's Ministry of Energy, responsible for the overall strategic oversight (noting that loan agreements did not fall within the responsibility of the MoE. Indeed, loan agreements were signed between Ministry of Finance (MoF) and CEB (Hensengerth 2011: 11)); Bui Power Authority (BPA), responsible for day-to-day planning, execution and management of the project including the implementation of the resettlement scheme; two consultancies, developing the dam design as well as carrying out the Environmental and Social Impact Assessment; CEB, largely financing the project, as well as Sinohydro implementing it. China’s role as a financer, through CEB, enables Ghana to develop using national policies rather than to subscribe to the World Bank or other funders’ social safeguards (Herbertson 2012: 35).

FIGURE 1: BUI DAM – PROJECT SET-UP



An Environmental and Social Impact Assessment (ESIA) was carried out by Environmental Resources Management (ERM), a British firm, including public consultations: "During scoping, […] focus group discussions in the villages during which villagers' perceptions and expectations were discussed. A national consultation meeting […] was well attended by over 120 participants from a wide range of [civil society organizations]" (ERM 2007: XI). Civil society and those to be resettled continued to be involved during the construction period via the Ghana Dams Dialogue; between 84 and 150 stakeholders participated in each dialogue session (Raschid-Sally 2009: 2f.). Twum (2012) – holistically examining the consultation process upon completion three years after Sutcliffe (2009) – finds that "affected people have been sufficiently consulted at all levels of their resettlement".

An international donor interviewed for this research pointed out how Ghana carefully studied a prior project's failing to ensure that the Bui Dam project did not repeat past mistakes (Interview T21052015). This prior project was the Akosombo Dam, constructed by an Italian consortium (Impregilo) from 1961 to 1965, and funded by the World Bank, the United States and the United Kingdom. It was originally conceptualized "as the engine of Ghana's accelerated transformation [removing] the shackles of colonialism" (Miescher 2014: 341ff.). However, many Ghanaians nowadays particularly remember the resettlement of

80,000 people due to the project, according to a new social media activist interviewed (Interview T20052015a); "different tribes [were] thrown together into standardized housing, [there was] inadequate water supply, poor soil" (Mettle 2011: 47).

Sinohydro, as the construction contractor, was neither involved in the ESIA on the Bui Dam nor in the implementation of the resettlement scheme. "Sinohydro's only task in this project was to execute the dam design", a scholar also carrying out a case study on the project confirmed (Interview T12052015). Because the public tends to believe the dam developer, in this case Sinohydro, would be responsible for a project's resettlement scheme, "Sinohydro unjustifiably takes much of the [public] heat" and criticism if a resettlement scheme fails, a consultant noted during our interviews (Interview T19052015).

Sinohydro's involvement in the project via a construction contract instead of a contractual agreement with additional roles and responsibilities (e. g. a build-operate-transfer (BOT) agreement) was most likely intended by the company. "Maybe the greatest challenge for dam developers going abroad is the lack of networks in the new countries they are operating in", a consultant serving several leading global dam developers argued (Interview T14072015). This lack of networks may lead to various issues during the project, e. g. difficulties in obtaining approvals. "Particularly in emerging markets, the signing-off of an ESIA is probably 80% relations and 20% content", a SIA consultant told us (Interview F19072015). Thus, involving additional players, particularly those with local experience, is a pathway chosen by dam developers in order to address their lack of networks in the host country; through the involvement via a construction contract Sinohydro could focus on what it is best at – constructing dams. If Sinohydro had entered a BOT agreement, there would have been the risk that it needs to shoulder more responsibilities than it can handle in the new market.

Hensengerth (2015) points out that countries in Southeast Asia sometimes actively encourage BOT agreements. A well-studied example of a BOT agreement by Sinohydro is Cambodia's Kamchay Dam; Sinohydro built and operates the dam under a 44-year concession agreement (Hensengerth 2015). A key reason for encouraging BOT agreements is that these countries lack the technical capacity to operate large dams. Not only due to Sinohydro's inexperience in the Ghanaian market, but also because of Ghana's vast experience in operating the Akosombo Dam, overseen by the Volta River Authority (VRA) since 1961 (VRA 2015a), the possibility of a BOT agreement was not discussed in the case of the Bui Dam; Ghanaian policy-makers assumed to possess the capacities in order to operate the dam. Indeed, none of those interviewed indicated a lack of capacity regarding

BPA with regard to the operation of the dam; the turning-over of the dam from Sinohydro to BPA upon completion was seemingly unproblematic.

Whereas Sinohydro seems to be largely disengaged from social safeguards policies in African dam projects, CEB undertakes a more active role. According to its internal guidelines, an ESIA must have been carried out prior to any dam project in order to be funded. In addition, CEB is supposed to monitor regularly whether ESIA recommendations are implemented in practice (OECD 2008: 190). Bosshard (2010) reports that China Exim Bank suspended funding of Gabon's Belinga Dam upon environmental concerns raised by various NGOs. A lawyer serving CEB on the financing of various dam projects in Southeast Asia confirmed that CEB nowadays pays attention to environmental and social safeguard standards. "It is on their radar, but they still care less about it than the traditional international donors" (Interview F01072015). Meanwhile, a World Bank official told us, that "the approaches the Chinese banks follow change and they change really fast. They are now much more in sync with the approach the World Bank and other development partners have because they learned from the difficulties they encountered" (Interview T09072015b). In the case of the Bui Dam, we did not find any evidence that CEB provided specific oversight. Limited oversight may have been needed in any case. After all, the ESIA was carried out by an established international player and "resettlement overall actually was rather smooth", a representative from the Ghana Dams Dialogue noted (Interview T16052015).

The combination of CEB and Sinohydro in a water supply dam project is typical for Chinese-funded water projects in Africa. In order to promote trade, loans by CEB are frequently tied to the participation of Chinese contractors in the project, in this case Sinohydro (Foster et al. 2008: 1). This combination reflects again the triple aim of China's foreign policy: Creating new profit pools for its SOEs, providing development assistance and strengthening ties to African leaders.

4. FINANCING MODALITIES OF THE BUI DAM

International donors, particularly the World Bank and the International Monetary Fund (IMF), usually tie their loans to a set of policies to be implemented by the recipient country, e. g. anti-corruption measures or, more contentious, the privatization of selected public services. This conditionality is rejected by Chinese players. Indeed, non-interference in a recipient country's domestic affairs is a key principle of Chinese engagement abroad – a principle criticized by many Western players (Nega & Schneider 2011: 421ff.). Indeed, an

international donor that we interviewed called this approach "ruthless profit maximization" (Interview T21052015). Mattlin & Nojonen (2015: 701ff.) agree that Chinese players expect a strengthening of economic, but also political ties with the recipient country as a consequence of the loan provided. They call this approach "emergent conditionality". The exact conditions of the various dam deals frequently remain opaque making assessments difficult, an activist noted (Interview F08072015a). This was acknowledged by a Chinese dam developer we interviewed. However, the developer also promised that this would change in the near future (Interview T18072015a).

The Bui dam was largely financed by China Exim Bank (CEB), founded in 1994 and solely owned by the Chinese government (China Exim Bank 2015). According to Fitch Ratings, China Exim Bank lent USD 67.2 billion to countries in Sub-Saharan Africa from 2001 to 2010, USD 12.5 billion more than the World Bank during the same period of time. Supposedly, 20 percent of China Exim Bank's total business volume is related to Africa nowadays; a total of 17 dam projects in Africa are currently financed by CEB (Interview T20052015b).

Possibly, only "China's low-interest loans […] got the [Bui Dam] project off the ground" (International Rivers 2015). Indeed, the Ghanaian government "had difficulty finding potential investors" for the project initially (Hensengerth 2011: 43). Anane (2015) reports that the World Bank refused to fund the project in the early 2000s particularly due to “the intensity of the campaign against the dam" which was focused on the environmental impacts of the project. The World Bank also generally abstained from hydropower project at that time (Schneider 2013).When an international call for tenders was launched in 2002, only one company submitted a bid – which was not accepted by the Ghanaian government. As a consequence, the country turned to China for help. Sinohydro eventually submitted an unsolicited bid for the dam in 2005. Accordingly, if CEB had not funded by the project, it may have never been constructed. Already the OECD (2012: 50) points out that "[Chinese infrastructure investment] has helped develop infrastructure […], which may otherwise not have had access to market finance or even to donor funding which tends to focus on social sectors".

Initially, Bui Dam's total project costs were estimated to stand at USD 622 million (International Rivers 2015). USD 562 million of funding was provided by CEB, whereas USD 60 million was provided via an investment of the Ghanaian government (Hensengerth 2011: 37). Eventually, additional funding of USD 168 million was needed for the final completion of the project, a budget overrun of 27%. This additional funding was again provided by CEB (Kunateh 2011).

Alves (2013: 207ff.) argues that "[African government's] weak institutional capacity to negotiate the deals with Beijing on an equal footing" would lead to various infrastructure deals favoring the Chinese players involved. An international donor we interviewed agreed to this depiction. Accordingly, he also believed CEB loans would not be favorable for Ghana. "Initially, the Chinese would just come to Ghana, provide a loan, ask only few questions. However, this honeymoon period is now over. Ghanaian policy-makers begin to understand that the Chinese want their money back soon. The Chinese are no do-gooders; they are in Ghana to make a profit" (Interview T21052015).

However, these depictions may not hold true upon closer examination. Indeed, anecdotal evidence suggests, that the project's financial arrangements were reached via tough negotiations. For instance, Exim Bank initially only offered a repayment schedule of 17 years which the Ghanaian negotiators managed to push to 20 years (Hensengerth 2011: 37). The typical pay-back-period for a large dam project is 20 years (T02072015a).

The eventual overall loan provided by CEB was semi-commercial – a USD 292 million buyer's credit with a 2% interest rate over commercial interest reference rates (CIRR) as well as a USD 270 million concessional loan at a 2% interest rate. These conditions are significantly more favorable than the average conditions offered by CEB. On average, CEB agrees to an interest rate of 3.1 percent, a grace period of 4 years, and an amortization period of 13 years (Foster et al. 2008: 2).

The eventual financial modalities provided by CEB for the Bui Dam largely resemble loans provided by the World Bank for similar projects. For instance, the World Bank recently provided (via its International Bank for Reconstruction and Development, abbreviated IBRD) a USD 474 million loan for a water supply development scheme in Lebanon. The loan's amortization period was 20 years, its grace period 5 years, provided at the standard variable interest rate for LIBOR-based loans (BBG 2015: 6; World Bank, 2015c); the 12-months-LIBOR rate (USD) stands at 0.8% in July 2015 (Wall Street Journal 2015).

Admittedly, Ghana – as a lower middle income country (World Bank 2015d) – would have been, at least on paper, eligible for a loan with more favorable conditions than Lebanon, an upper middle income country (World Bank 2015e). A loan to Ghana for the Bui Dam would have been provided by the World Bank's International Development Association (IDA). However, IDA funding is extremely limited. The costs of the Bui Dam could have not been covered by it, a former World Bank explained to us (Interview F18092015). Hence, Ghana would have obtained an IBRD enclave loan for the Bui Dam if the World Bank had

decided to fund the project. These IBRD enclave loan conditions would have been comparable to the IBRD loan conditions of the water supply development scheme in Lebanon (Interview F18092015).

The financial modalities for the Bui Dam are summarized in Table 1, largely collated by Hensengerth (2011: 37).

TABLE 1: FINANCIAL MODALITIES FOR THE BUI DAM

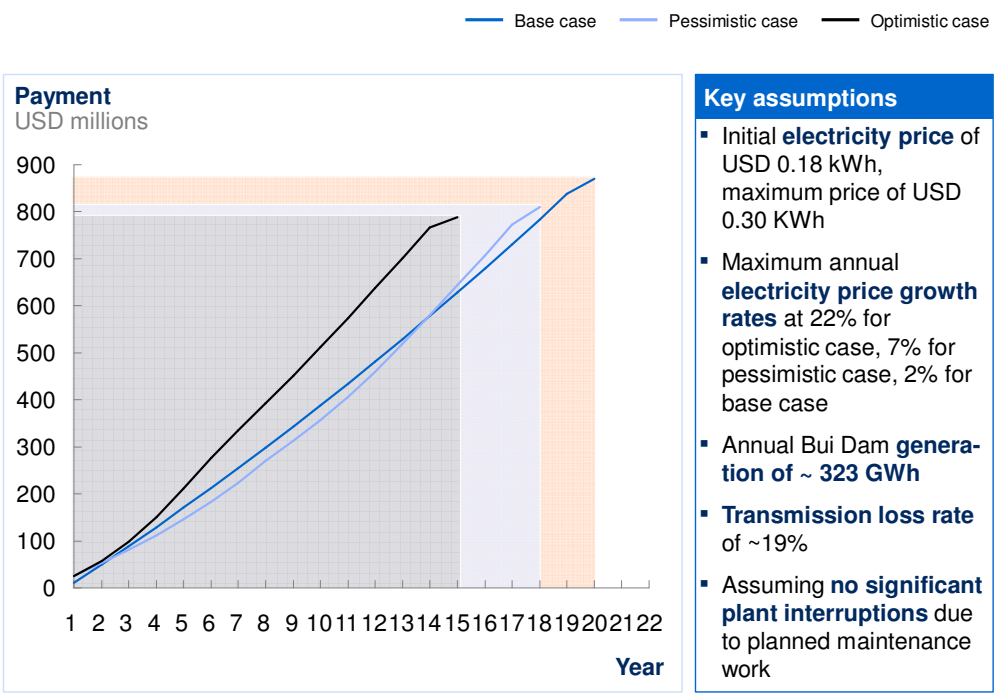
Type of credit	Amount (USD million)	Interest rate	Amortisation period	Grace period
Buyer's credit	292	2% over CIRR	20 years	5 years
1st concessional loan	270	2%	20 years	5 years
2nd concessional loan	168	2%	20 years	5 years
Ghanaian government upfront investment	60	-	-	-

The eventual Bui Dam deal structure is viewed favorably within Ghana's Ministry of Finance (MoF). A former MoF employee noted during one of our interviews that "CEB [really] follows international best practices" (Interview O27052015). Indeed, three simple calculations also suggest that MoF was able to secure advantageous conditions concerning the project's amortization. Even in the most pessimistic scenario from today's perspective, as depicted in Figure 2, a positive cash flow is reached in year 18; a positive cash flow is reached in year 15 in our optimistic scenario as the initial project costs pay back via the generated revenues in only 15 years.

Both our pessimistic and optimistic scenarios are rather conservative, e. g. assuming a transmission loss rate of 19% (World Bank 2015a) as well as an annual Bui Dam power generation of only 323 GWh (Interview T20052015c); if the dam ran as planned, annual electricity generation would amount to 980 GWh (Kunateh 2013). We did not take into account possible protections under a power purchase agreement (PPA) for dispatch in the event of low demand because Ghana is facing an annual capacity shortfall of 200-250 MW (Energy Commission Ghana 2014: 2f.). Furthermore, no dividend of the government was assumed for the project pay-back period. Additional key assumptions are depicted in Figure 2. The outlined electricity price growth rates were determined via expert interviews with management consultants as well as international donors.

A key reason for the rapid pay-off in both scenarios is the significant increase in Ghana's electricity prices in recent years. When the construction of the Bui Dam started, the Ministry of Energy (MoE) assumed an electricity price per KWh of USD 0.045 (Hensengerth 2011: 40). Already then, one of those interviewed by Hensengerth (2011: 40) noted "the project can pay for itself". Indeed, an annual rise of electricy prices of only 2% (modelled within our base case) would have led to an amortization period of 20 years. However, electricity prices rose much faster than 2% annually in recent years. For instance, the current residential price stands at USD 0.18, 4 times the assumed price (PURC 2015). Accordingly, only few scenarios can be thought of that would be non-favorable from the Ghanaian perspective.

FIGURE 2: BUI DAM - REPAYMENT SCENARIOS



The original CEB loans were secured via commodities, namely cocoa (Verma 2011). This backing via commodities serves as an insurance (from the Chinese perspective) against possible loan default. According to Hensengerth (2011: 38), the Chinese government "guaranteed to purchase 30,000 tons of cocoa per year from the Ghanaian government at going world market prices until the dam was operational". Cocoa revenues are to be deposited in an escrow account. Upon completion of the project, 85 percent of the electricity sales are also deposited in

this escrow account in order to service the loan, whereas the remaining 15% of electricity sales revenues are marked for BPA to cover administrative costs (Hensengerth 2011: 38). This deal structure involving natural resources is called the "Angola model"; it was first adopted during different energy, water and road projects in Angola (Foster et al. 2008: 4).

5. BUI DAM'S IMPACTS ON THE LOCAL LABOUR MARKET

China's investments in Ghana have already significantly impacted the country's labor market, with Chinese players creating many jobs. However, trade unions have repeatedly expressed grave concern regarding working conditions in Chinese firms (TUC 2013: 19ff.). Whereas an ESIA was required before work began and CEB monitored the impact, working conditions were initially poor and improvements were driven by workers and Bui Power Authority (BPA).

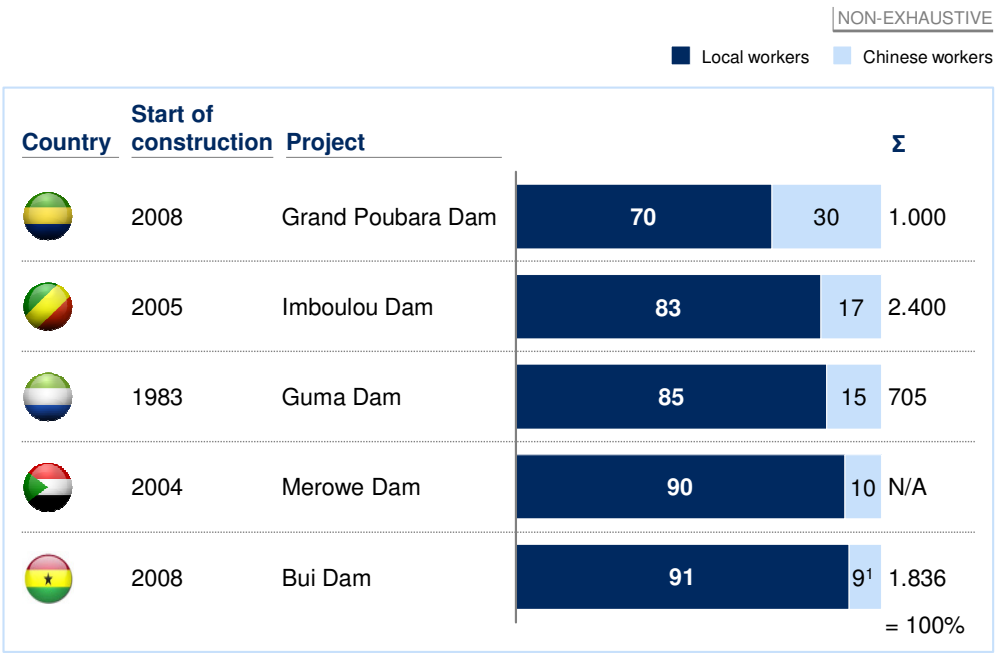
Supposedly, Sinohydro was the ideal candidate for constructing the Bui Dam in Ghana due to its "reputation for building dams under problematic […] conditions"(Hensengerth 2011: 43); Ghana was (and is) in urgent need for an increase of its energy capacity, while Sinohydro maintains a reputation as an engineering firm that can deliver large dam projects with relatively few overruns in either the schedule or budget little schedule and budget overruns.

At the peak of the project, Sinohydro intended to hire 2,600 Ghanaian workers as well as 400 Chinese workers to construct the dam. Assuming an employment-to-population ratio of 66% for those above 15 years old (World Bank 2015b) and taking into account that 39% of Ghana's population is below 15 years (KFF 2015), this would imply that the project could yield temporary employment for roughly 1 out of 20 workers in the Tain District. However, the lack of a skilled workforce was expected to result in workers from neighboring districts being used and that the local population may be able to sell food to the construction workforce (Sutcliffe 2009: 5).

In reality, a maximum of 1,836 workers were employed at the site, with 1,676 (91%) being Ghanaian (TUC 2013: 20). Most workers were reported to come from outside of the construction area (Baah & Jauch 2009: 103), although accurate data on the origins of workers employed at the site not available. This influx of workers is likely to have social impacts. However, no press reports detailing these impacts were identified. Large influx of workers from districts outside of the construction area are frequently associated with a rise in prostitution, and the introduction of diseases (Lerer & Scudder 1999: 113ff.).

The mixture of Chinese as well as Ghanaian workers during the Bui Dam project may have been typical for such projects. Indeed, evidence mostly collated by Brautigam (2015) and depicted in Figure 3 suggests that only 2 out of 10 workers employed during dam construction in Africa will be Chinese.

FIGURE 3: CHINESE DAM PROJECTS IN AFRICA



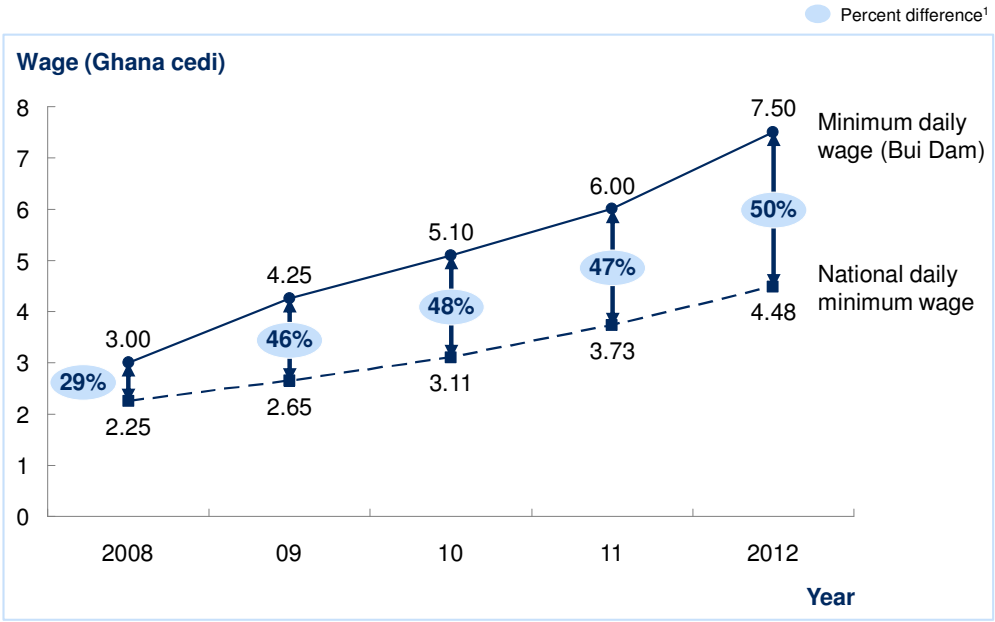
1 6% of the foreign workers at the site were Chinese, 3% were Pakistani

SOURCE: Various sources, collated by Brautigam (2015), Ghana Trades Union Congress (TUC) (2013)

International Rivers (2008) claims that Bui Dam workers were underpaid. At the beginning of the project in 2008, the minimum wage at the Bui Dam site was 29% higher than the national daily minimum wage (TUC 2013: 27). As depicted in Figure 4, this gap widened to 50% until 2012, allegedly due workers' protests during the project. Assuming construction workers worked 20 days per months, a daily minimum wage of 7.5 Ghana cedi (GHS) would imply a monthly wage of 150 GHS – 86 GHS above the World Bank's poverty line for Ghana, but 160 GHS below the alleged living wage for Ghana, necessary for a satisfactory standard of living (WageIndicator Foundation 2015).

Allegedly, laborers worked for nine hours (regular Ghanaian working day: 8 hours). Any overtime work should be compensated by Ghanaian law; it was reported this did not necessarily happen. Furthermore, there were reports that initially none of the Ghanaian workers were given a contract of employment. This changed, though, upon unrests within the workforce (Baah & Jauch 2009: 100).

FIGURE 4: GHANAIAN NATIONAL MINIMUM WAGE AND MINIMUM DAILY WAGE AT THE BUI DAM IN COMPARATIVE PERSPECTIVE



1 Formula employed: $(IV_1-V_2I/((V_1 + V_2)/2) * 100$

SOURCE: Ghana Trades Union Congress (TUC) (2013)

A scholar investigating Chinese investments in Africa noted during our interviews that "Chinese companies do not expect labor to be organized when they come to Africa" (Interview T20052015b). Another scholar remarked that Chinese firms would initially implement an "industrial revolution capitalism when going abroad" (Interview T12052015). These notions may be reflected in the Bui Dam project. Upon the start of the project, workers attempted to launch a labor union. However, this attempt "was met by the Chinese management with open intimidation and victimization"(Hensengerth 2011: 35). Only upon intervention of BPA, which, in turn, was caused by mass resignation of workers, the union was set up and started negotiating and driving up wages.

Despite the launch of the labor union, working conditions remained questionable, though, according to articles in the popular press. Supposedly, workers who were absent on health grounds for more than three days were dismissed (The Ghanaian Times 2008). Allegedly, Sinohydro also did not provide workers with safety working gears or proper accommodation; workers were "billeted twelve to a room, with little ventilation and poor sanitation" (Smith & Talbot 2009). Some Chinese supervisors, allegedly, even kicked and hit their Ghanaian subordinates without any provocation (The Ghanaian Times 2008).

When confronted with criticism, Sinohydro did not acknowledge any issues. The company allegedly claimed that "after all, some of them are living in better accommodation here than most of the villagers around" (Motey 2008). Indeed, working conditions may not have been atypical for a large infrastructure project in Ghana. Laryea & Mensah (2010) investigate 14 construction sites in the country in 2009 and 2010 finding poor health and safety policies and procedures almost everywhere; "injuries and accidents are common", the authors argue. During one of our interviews, an international donor also remarked that "construction sites in Ghana never meet international standards – no matter who is implementing the project" (Interview T20052015c). An official from Ghana Grid Company noted that "working conditions [at the Bui Dam site] were generally ok. The major concerns about Chinese engagements are in the resources sector like mining, not in the water sector" (Interview T27052015).

Despite various protests by the workforce, the project was completed in May 2013 – 6 months after the originally envisaged launch date. This delay is minor for a large dam project; the contentious paper by Ansar et al. (2014: 7) reports an average delay of large dam projects of 2.3 years. WCD (2000: 42ff.) finds that 50% of dam projects are completed on time, 30% of projects were delayed for 1 or 2 years, 20% for more than 3 years.

On-going, non-verified secondary impacts of the project on the local labor markets have been reported to include illegal mining causing water pollution (Vibe Ghana 2015), and increases in narcotic drugs, prostitution and armed robbery in the area associated with illegal mining activities (Graphic Online 2015) as well as a reduction in fish numbers near to the dam posing a threat to local livelihoods (GMG 2015).Villagers also report that the reservoir area has become a mosquito breeding area, resulting in the upsurge of malaria cases and other river-borne diseases (Today, 2015).

The first feasibility study on the Bui Dam was carried out in 1992 (WT 2015). Indeed, as already outlined, various attempts were undertaken to materialize the project. "Only the Chinese eventually did it. They proved that something that had been in the cabinets for decades could actually be implemented rapidly if you bring in the Chinese. The implementation of the Bui Dam impressed many policy-makers in Ghana", an international donor noted in one of our interviews (Interview T20052015c).

Many within the general public, though, argue that the Bui Dam would not have has not lived up to its promise. "The government told people the dam would solve Ghana's energy shortage. Now the project is completed and there is still an energy shortage. So people just feel it is a waste of money", a new social media activist

told us, for instance (T20052015a). Similarly, much of the envisaged irrigation infrastructure is apparently not yet fully developed.

6. CONCLUSION

More and more countries in Africa now enter agreements with Chinese investors in order to develop water infrastructure. However, many claim China's engagements in Africa are a "new form of colonialism" (Tiffen 2014). Supposedly, Chinese firms would not shoulder responsibilities for the local population (Al Jazeera 2014). Furthermore, allegedly shady deals and loans by Chinese banks would only lure African countries in massive debt build-up (Beattie 2006). Lastly, Chinese projects would not create any jobs for Africans, but would "rely primarily on workers flown in from China" (Hook 2013).

We investigated these claims drawing on Ghana's Bui Dam, a major water supply and power generation dam, as a case study. The project was financed by China Exim Bank, the largest financier of infrastructure in Africa these days, and implemented by Sinohydro, the world's largest hydropower company. Herein, we found that the reality may be far from colonialism.

Sinohydro acted as construction contractor within the Bui Dam project, solely responsible for executing a pre-defined dam design and largely disentangled from the project's social safeguards policies. The project's ESIA was carried out by Environmental Resources Management (ERM), a British consultancy, and the resettlement scheme was carried out by Ghana's Bui Power Authority (BPA). CEB monitored the implementation of ESIA recommendations, but did not intervene at any stage.

From a financial modalities perspective, the Ghanaian negotiators managed to secure favorable arrangements, comparable to those provided by the World Bank, as evidenced by our comparison to the water supply development scheme in Lebanon, funded by the World Bank. Not all African governments may be able to negotiate such conditions, though. The Bui Dam's financial modalities became even more favorably recently due to the drastic increases in Ghana's electricity prices. Even in our most pessimistic scenario, the Bui Dam will pay off in 18 years – two years faster than the typical payback period for a large dam.

While the criticism about the reliance on overseas workers is not supported, with over 90% of the employment being of Ghanaian workers, the working conditions and pay conditions were poor, with working conditions comparable to similar construction sites in Ghana, and pay causing worker unrest and project delays.

The CEB funding provided an opportunity for Ghana to develop this project that was otherwise not available. The Bui Dam may now operate for up to 100 years, providing irrigation for 30,000 ha of land as well as up to 980 GWh of electricity annually. However, that does come at an environmental and social cost. For water supply projects, where international funding is used without strong safeguards imposed, it remains the responsibility of the country to ensure environmental and social impacts are mitigated. One key area that was highlighted by this case study is the need for better management of labor conditions.

NOTE

This paper is part of a larger research project investigating various socio-economic impacts of dams. More than 100 semi-structured interviews have been carried out for this project to date. Interview partners are international donors, policy-makers, scholars, NGOs, consultants as well as dam developers (including Chinese dam developers). Only those interviews cited in this paper are listed in the table below.

Interviews were carried out via telephone and e-mail/online survey from April to August 2015 as well as during field research in Singapore, Myanmar and Thailand in June to August 2015. Given the sensitive nature of the topic, all interviewees were assured anonymity. Thus, all interviews are coded with the first letter indicating the type of interviews (T for telephone, F for face-to-face, O for online survey/e-mail) and the sequence of numbers indicating the date.

TABLE 2: INTERVIEW OVERVIEW

#	Interviewee	Organization	Interview code
1	Scholar	British university	T12052015
2	Senior leader	Ghana Dams Dialogue	T16052015
3	Consultant	Involved in various Chinese-led dam projects, mostly Southeast Asia	T19052015
4	Leading new social media activist in Ghana	N/A	T20052015a
5	Scholar	U. S. university	T20052015b
6	Team leader, renewable energy program Ghana	International donor	T20052015c

7	Deputy head of a European embassy in Ghana	International donor	T21052015
8	Senior official	Ghana Grid Company Ltd. (GRIDCO)	T27052015
9	Senior official (retired from ministry at question)	Ministry of Finance (Ghana)	O27052015
10	Laywer, serving CEB in financing various Southeast Asian dam projects	Major global law firm	F01072015
11	Managing partner	Consultancy specialized in hydropower and water resources projects	T02072015a
12	Activist	Involved in various anti-dam movements in Myanmar, especially the Myitsone Dam	F08072015a
13	Senior official	World Bank	T09072015b
14	Managing partner	Major global strategy consulting firm	T14072015
15	Spokesperson	Major Chinese dam developer	T18072015a
16	Senior engineer	European dam developer, involved in various dam projects in Southeast Asia	T18072015b
17	Social impact assessment (SIA) consultant leading firm's operations in Southeast Asian country	Major SIA consultancy	F19072015
18	Former civil servant	World Bank	F18092015

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