

Chinese hydropower companies and environmental norms in countries of the global South: the involvement of Sinohydro in Ghana's Bui Dam

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Abstract The paper examines the role of environmental norms in Chinese overseas investment in hydropower dams, exemplified by Sinohydro's involvement in the Bui Dam in Ghana. While the investment of Western companies in hydropower dams in the global South is decreasing owing to changing notions of sustainability in the West, the investment of Chinese companies in hydro dams in Africa, Southeast Asia and Latin America is accelerating at great speed. The emergence of Chinese companies in international markets in the context of China's Going Abroad strategy has sparked a debate on whether China can be considered a norm-changer in international development. The paper considers this question in the context of the status of environmental norms in Sinohydro's investment in Ghana's Bui Dam. The paper argues that the role of international norms in Chinese investment is dependent on two factors: the contractual arrangements under which Chinese companies operate abroad and the political institutions of host countries.

Keywords Hydropower · Dams · Environment · Norms · Chinese overseas investment · South–South cooperation

1 Introduction

Since the launch of the Going Abroad strategy, Chinese companies have been increasingly competing with established Western companies, buying assets previously held by them or gaining more international market shares (Goldstein 2007). Chinese infrastructure companies, for instance, have made significant inroads into the international market for large hydropower dams (McDonald et al. 2009). The reasons why Chinese companies, state-owned and private, venture abroad are manifold. Brautigam (2010) pointed out that the Chinese government encourages companies to invest abroad, particularly those that are energy and labour-intensive, for a number of reasons: companies in China are supposed to

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move up the value chain, pollution laws are getting tougher, and labour costs are rising, not only in the booming coastal provinces but, as *The Economist* (2012b) has recently reported, also in the rural hinterland. Therefore, it may become advantageous to move costly and polluting production to other countries where regulations are laxer and labour costs lower.

Furthermore, growing competition within the Chinese market is prompting companies to go abroad to look for shares of international markets. Consequently, winning a project outside China is, from the company's point of view, a strategic step in improving its revenue and international competitiveness, in opening up new markets, and in acquiring the latest technology and access to market information (Alden 2007; Gu 2009; Downs 2000: 15–42; Leung 2011: 1335; Wang 2002: 203). Chinese companies are therefore looking for long-term engagements in foreign markets (Chen and Orr 2009: 1207–1209).

As a consequence, as scholars such as Downs (2006, 2009) and Chen (2011) have emphatically argued, even Chinese state-owned companies operate like other firms on a commercial basis and with a great degree of independence from the Chinese government. As Hong and Sun (2006, 615–616) point out, China's foreign investment is now commercial rather than political, it is enterprise-led, and it covers a 'range of objectives including market seeking, technology seeking, risk diversification, and other objectives common to MNCs worldwide'. This view is mirrored by Mawdsley (2007: 406–407) who emphasizes that Chinese companies abroad act in very different environments, not only as regards the nature of their business (import–export, manufacturing, resource extraction), but also in terms of the political environment they work in: while some may profit from authoritarian governments, others profit from transparent environments. Thus, in their pragmatic orientation they are very similar to Western companies.

The present article evaluates the role of international standards in Sinohydro Bureau 8's (henceforth: Sinohydro) engagement in the Bui Dam in Ghana. The reason for choosing Bui is that at the time Sinohydro became involved, the dam had a history of roughly 50 years in which several attempts at planning were taken, but none matured to construction. This was due to several changes in government preferences and policies, civil conflict, and—since the 1990s—a lack of interest among Western governments to finance the dam owing to changes in the sustainability discourse in the advanced industrialized countries. It is this changing sustainability discourse that makes Sinohydro's involvement in the Bui Dam interesting as it allows investigation into the environmental effects of Chinese companies and whether or not their involvement is detrimental to the environment.

The present article analyzes the involvement of Sinohydro in planning and building the dam and examines the environmental effects that can be directly linked with the activities of the company. The article concentrates on the environmental impact assessment process rather than on resettlement and wider social issues that surround the debate of large dams. It therefore focuses on the planning phase rather than the construction phase. The narrow focus will shed light on the precise responsibilities of Sinohydro vis-à-vis Ghanaian actors in the field of environmental protection in project planning (and implementation) and on the type of norms—international, Ghanaian, or Chinese—that the company has to comply with.

The government-backed emergence of Chinese companies in the international market place has sparked analyses of future trajectories of international development. The roles of economic governance institutions of the G8 and the G20 have been intensely discussed in the context of whether or not China can be considered a rule-changer in international politics (Chin 2008; Chin and Thakur 2010; Subacchi 2008; Payne 2008). Some even argue for the existence of a Beijing Consensus whereby China is leading the way in the advocacy

of localism in economic policy-making (Ramo 2004). In a more moderate twist of Ramo's argument, Grugel et al. (2008) identify the search by Latin American and Asian countries for more autonomy in development after the debt crises in these regions. Others see the emerging economies as a new creed of state capitalist countries that refuse to comply with the prescriptions of the Washington Consensus (*The Economist* 2012a).

The Chinese government certainly has different concepts and practices of development. The 'Angola model' of backing infrastructure deals with natural resources, the mixed-package financing mode of commercial and concessional loans, and the no-strings policy regarding political and economic governance are in sharp contrast to the practice of the countries of the developed North (Davies 2008; Rotberg 2008; Grimm et al. 2011). In response to this, some authors argue that economic development is based on transparency and good governance, including the observance of social and environmental standards and that therefore the Chinese approach does not provide an alternative path to development (van Dijk 2010; Naím 2007).¹ Others have argued that the Chinese approach holds advantages over the Western approach (Sautman and Yan 2007; Li 2007). Again others caution both sides and argue that the Chinese approach to development is effective under certain conditions or at least needs to be evaluated by looking at actual projects on the ground (Woods 2008; Haglund 2008; Brautigam 2009, 2010; Zafar 2007).

Yet, in regards to the question of whether China is intent on changing international norms, the issue of Chinese government involvement in foreign investment via subsidized loans and diplomatic support has to be treated with care. Whether or not a Chinese company receives preferential loans from Chinese banks and/or diplomatic support from the Chinese government says little about the nature of its involvement in projects abroad. This article argues that the contractual setting in which Chinese companies operate and the governance setting of the host country are the key factors in determining whether or not strict environmental protection measures are implemented in projects with Chinese involvement and whether Chinese firms apply international norms, the norms of the host country, or Chinese norms.

While the debate about the conceptual and practical differences of development between the countries in the Organization for Economic Cooperation and Development (OECD) and China is well documented, little is known about the detailed involvement of Chinese infrastructure companies in project planning and implementation.

In a first step, the article sets the scene by looking at the role of the emerging countries in international development and the relevance of international norms. Next, it evaluates Sinohydro's role in planning and building the Bui Dam, with a focus on the environmental impact assessment process. Following this, the article looks at the wider implications of the Bui loan agreements for Ghana's economic development.

Data come from field work conducted in Ghana in 2010. Field work consisted of collection of relevant literature and of interviews with Ghanaian government institutions (the Ministry of Finance and Economic Planning; the Ministry of Energy; the Environmental Protection Agency; the Energy Commission; and the Water Resources Commission), researchers, OECD donor agencies, and civil society organizations. Interviewees were assured anonymity. The interviews are therefore coded, with the first letter indicating the place of interview in Ghana and the number sequence the date of the interview.

¹ For a slightly different line of argument concerning a race to the bottom in labour standards between developing countries see Chan and Ross (2003).

2 South–South cooperation reloaded? The overseas investment of Chinese companies and the question of international norms

At a keynote speech at the Development Cooperation Forum at the United Nations Headquarters in New York in June 2010, Yi Xiaozhun, China's Vice Minister of Commerce, emphasized that China supported South–South Cooperation as a means to support the development of Third World countries. Outlining the Chinese view, he pointed out that developing countries are overly reliant on development aid and that a mix of approaches, including 'trade, investment, technology transfer, [and] capacity building' should be incorporated into development policies. Moreover, emphasizing localism over the liberal one-size-fits-all policies of the World Bank, Yi argued that developing countries should 'identify the policies and solutions most responsive to their own needs'. A pre-condition for this is 'non-politically conditioned assistance' (*Xinhua* 2010).

The prominent role of China, along with the economic rise of Brazil, India, and South Africa, has arguably given a new boost to South–South Cooperation (Melville and Owen 2005). Having occurred hitherto between rather powerless and heterogeneous developing countries (Saksena 1985; Sridharan 1998), South–South Cooperation now has proponents with global influence (Shaw et al. 2007; Alden et al. 2010; Dirlik 2007). This is most visible in the formation of the BRIC (Brazil, Russia, India, and China) group of countries at their summit in Yekaterinburg in 2009. BRIC was expanded to BRICS with the inclusion of South Africa in December 2010 and the attendance of Jacob Zuma at the 2011 BRIC summit in Hainan. The BRICS group's announcement of its intention to set-up a development bank that would take away the dominance of the World Bank in international development (*BBC* 2012) is indicative of the impatience that emerging economies feel with regard to stalling reforms of the power distribution in the International Monetary Fund (IMF) and the World Bank. As Alden and Vieira (2005: 1079–1080) make clear, the emergence of new powers results in 'normative calls for restructuring international institutions to reflect greater global representivity' which undermines the position of the classic middle powers and the principles that they support (*ibid.*: 1079–1080).²

Other parts of the traditional global governance system are already changing. The G20, which includes the BRICS along with other emerging economies such as Argentina and Mexico, was formed at the G7 Finance Ministers' meeting in 1999. Since the 2008 global financial crisis and the Asian-led economic recovery of the world economy, the G20 has replaced the G8 'as the world's premier forum for economic cooperation' (Asian Development Bank and Peterson Institute for International Economics 2011: v; Hart and Jones 2011: 63). Writing in *Survival*, Hart and Jones (2011: 63) argue that the fact that this shift from the G8 to the G20 was swift and peaceful is an indicator of 'clear Western acceptance of the global role of the rising powers'.

China, therefore, is not alone in challenging Western dominance in international development. Furthermore, developing countries have now found that they can use Chinese aid as bargaining chip when negotiating loans and grants with Western countries. As recently emphasized by Cambodia's charismatic Prime Minister Hun Sen, when developing countries cannot get money from Western institutions such as the World Bank, they can still get money from China (*IRIN* 2012).

² See Alden and Vieira (2005: 1078–1080) for their distinction between classic and new middle powers. For conceptual debates on the shifts in global power distribution see Young (2010), Ikenberry and Wright (2008), Alexandroff and Cooper (2010).

As the emerging powers have not only greatly reduced or shed entirely their dependence on developing aid, they have themselves become lenders to less developed countries, thus dramatically reducing the influence of the developed North. Added to this is a keen economic interest of the emerging economies in developing countries. As Woods (2008: 1205) summarized:

Common to most of these [new] donors is a quest for energy security, enlarged trading opportunities and new economic partnerships, coupled with rapidly growing strength and size in the global economy.

This holds true for the interest of the Chinese government and Chinese companies in Africa, given the domestic demand for raw materials, export, and investment (Mawdsley 2007). Mohan and Power (2009: 2) argue that in contrast to Western countries China does not view Africa as a lost cause but ‘as a region of profitable economic possibilities’.³

With Western companies and multilateral development banks being subjected to intense scrutiny by international non-governmental organizations (NGOs), public, and the media against the backdrop of changing notions of sustainability (Park 2010; Suzuki 2007), Chinese companies have gained ground in the energy and infrastructure markets of developing and emerging economies in Southeast Asia, Latin America and Africa. Hydropower is an important sector here, not only for Chinese infrastructure companies, but also for developing countries who see hydropower as a cost-effective and clean way to build up their energy basis (Nelson 2003–2004; Timilsina et al. 2010).

This raises the question of the environmental sustainability of dams. In the advanced industrialized countries, no large dams are built anymore and existing ones are often decommissioned. This is because the sustainability discourse has taken on a decidedly anti-dam form, fuelled by prominent social and environmental disasters such as Pak Mun in Thailand and the Narmada controversy in India (Khagram 2004; Wood 2007). In the wake of the Narmada conflict, the World Commission on Dams was formed and pressured by global media and civil society, global governance institutions—most prominently the World Bank—slowly overhauled their environmental policies (Park 2010) before re-engaging in financing large dams. In addition, while dams are seen by many to be a form of clean energy as they do not emit CO₂, hydropower has been lambasted as having an even worse greenhouse gas effect as they emit methane (Frey and Linke 2002; Giles 2006).

In contrast to this development in the sustainability debate, emerging and developing countries are experiencing a boom in large dam construction, fuelled by companies from emerging economies, particularly China. Indeed, the World Bank (2009) emphasized that dam-building, particularly multi-purpose dam-building for power, navigation, irrigation, and flood protection, is on the rise in emerging and developing countries. A dam database of Chinese-built dams overseas maintained by International Rivers and last updated in January 2012 (at the time of writing) lists a total of 59 Chinese hydropower or multi-purpose dam projects in Africa, 48 of which are large (International Rivers 2012). This raises the question of how relevant international environmental norms are in Chinese hydropower investment.

In addition, it raises the question of whether or not dams should be discussed as international development projects. Although the Bui Dam is at least partially funded through a commercial loan and falls within the remit of China’s Going Abroad strategy, it is nevertheless analyzed here as a project within the area of international development. There are three reasons for this: first, the purpose of the dam is to serve electrification in a

³ Of course, there is also a clear strategic-political interest. For details see Taylor (1998), Ding (2008).

developing country that is suffering from energy shortfalls. Second, it is funded by two loans extended by the China Export Import Bank (China Exim Bank), of which only one is straightforwardly commercial whereas the other is concessional. Third, commercially driven companies are increasingly involved in international development, thus moving away from the narrow focus of development as an exclusive government domain (Baillie Smith and Laurie 2011). Not only is such narrow definition of aid refuted by the Chinese government, but also Western companies are becoming increasingly involved in the business of development.

As a consequence, China's increasing role in building up international energy infrastructure gives it an important role in what de Morais de Sa e Silva (2010) has termed a 'revamped South-South cooperation', which goes hand in hand with a shift in global power relations. Yet, as Vieira and Alden (2011) emphasize, this does not mean that the leadership role of these emerging powers is generally accepted by developing countries, particularly by those in the respective regions of South America, Southern Africa, South Asia, and Southeast Asia, or that emerging economies are not in competition with each other over access to markets. However, cooperation between emerging powers expresses the 'common understanding that together they can better contribute to the reshaping of global governance mechanisms in a number of sensitive issues in contemporary global politics' (p. 509).

Yet, this does not say much about what sort of norms Chinese companies apply in their foreign investment. Rather than replacing Western norms with other norms, it may well be that the participation of Chinese companies in the international market place leads to their acceptance of international norms should it be conducive to their investment activities. Brown (2008: 7–8) pointed out that many Chinese companies are still adapting to foreign investment environments as Chinese foreign investment was almost non-existent before the beginning of the economic reforms in 1978/79. But changes are afoot. Gugler and Shi (2009) argue that Chinese companies have begun to adopt corporate social responsibility policies, not so much in compliance with Western standards but in order to pro-actively improve their competitive position in international trade.⁴ Even financiers are taking an interest in international norms as Chinese banks have been urged to adopt international standards, particularly the Equator Principles, 'in order to avoid a "race to the bottom" between banks' (Matisoff and Chan 2008: 34). While China Exim Bank has not adopted the Equator Principles, it published its first environmental guidelines in 2004 and updated and expanded them in 2007 (China Exim Bank 2007). China Exim Bank also went on the offensive by meeting with International Rivers director Peter Bosshard and American scholar Deborah Brautigam and told them that it was working with Western institutions to improve its environmental assessment procedures (Bosshard 2010a).

Developments such as these indicate that the picture of the role of international norms in Chinese foreign investment is complex. Surveying forty-four Chinese construction companies operating in Africa, Chen et al. (2009: 80) found that 40 % won contracts through international bidding, 40 % through bidding for Chinese contracts, and 11 % through sole source negotiation. As the authors clarify, the nature of the contract is one factor that influences the norms Chinese companies use: feasibility studies, environmental impact assessments, and social impact assessments drawn up by international lending agencies such as the World Bank include the norms and standards of these agencies. Chinese companies contracted to execute such studies are normally compelled to abide by the

⁴ For a summary of the debate on the concept of corporate social responsibility and its links to development see Prieto-Carrón et al. (2006), Jenkins (2005), Blowfield and Frynas (2005).

norms referenced in the documents. Of the companies surveyed, seventeen applied international standards as required by the financier, fifteen applied host country standards, nine applied Chinese standards, and three could choose the standards they applied (p. 86).

3 Environmental impact assessment for the Bui Dam: who is involved and what norms are applied?

The Bui Dam is an example of sole source negotiation of Chinese agencies with the government of Ghana. After several failed attempts during the previous decades to build the Bui Dam,⁵ in 2005, the Ghanaian government accepted an ‘unsolicited bid’ from Sinohydro to finance and construct the Bui Dam (World Bank 2008: 108). The acceptance of Sinohydro’s bid was followed in the same year by a Memorandum of Understanding between Ghana’s Ministry of Energy and Sinohydro, with funding to be solicited from China Exim Bank (Fink 2005: 71). The Chinese government made its support public by announcing at the 2006 summit of the Forum on China–Africa Cooperation in Beijing that it would fund the project. The government of Ghana signed the loan agreements with China Exim Bank in 2008.

However, despite the lack of an international bidding process, the Chinese project company, Sinohydro, is bound by international standards. The reason for this is rooted in two developments: first, the Ghanaian government commissioned European companies to draw up the feasibility study and the environmental and social impact assessment (ESIA) study. Second, Ghana’s environmental laws not only consistently refer to international norms, but they are also reasonably well implemented. This also holds true for the procedures leading to the loan agreement with China Exim Bank, as Ghanaian law stipulates that loan agreements can only be signed after ESIA have been conducted. The following analysis will examine these two factors in detail.

3.1 The role of European companies in planning the Bui Dam

Chen et al. (2009) found that in some of the projects in Africa that see Chinese involvement, Chinese companies have to implement projects that were planned by European companies that use international norms. This holds true for the Bui Dam. The first feasibility study for Bui was conducted in 1976 by Australia’s Snowy Mountains Engineering Corporation. It was updated in 1995 by French company Coyne et Bellier. Since then, the Ghanaian government has held on to Coyne et Bellier. In 2006, following the Chinese engagement, the government asked the French firm to update its 1995 study (Fink 2005). Coyne et Bellier continue to function as consultants to Sinohydro during the construction phase (Zigah 2009: 26).

A similar development can be observed for the ESIA process. In 2005, 2 months after the Ministry of Energy and Sinohydro concluded the Memorandum of Understanding, the Ministry of Energy signed a contract with UK firm Environmental Resources Management to draw up the ESIA study. Environmental Resources Management delivered its report in January 2007 (Environmental Resources Management 2007a). In February 2007, the Environmental Protection Agency approved the ESIA study. It was only then, in April 2007, that the Ministry of Energy and Sinohydro signed the Engineering, Procurement and Construction turnkey contract. In July 2007, Ghana’s parliament approved the financing

⁵ For a history of the Bui project before the Chinese engagement see Fink (2005).

package of US\$662 million. In 2008, Ghana's Ministry of Finance and Economic Planning and China Exim Bank signed the loan agreement.

As a consequence, all key planning documents were drawn up not by Chinese companies, but by European companies. Furthermore, the loan agreements were approved and signed following the completion of the environmental approval process. In the planning and construction for Bui, the project company Sinohydro is therefore bound by the norms referred to in the planning documents—at least in theory and to the extent that the Ghanaian government is interested in implementing them. Essentially, what has therefore occurred is that Sinohydro was contracted to build the dam based on a set of planning documents commissioned and paid for by Ghanaian government agencies and written by European consulting agencies.

3.2 Norms and implementation of the environmental approval process and the loan procedures

While Sinohydro is the construction company tasked to build the dam, the Bui Power Authority is the project owner. Formally created under the Ministry of Energy, the Bui Power Authority as project owner is obliged to apply for all necessary permits to the relevant Ghanaian government agencies. In order to obtain the environment permit, the Bui Power Authority had to apply to the Environmental Protection Agency that is also in charge of approving the ESIA study that was drawn up by the UK's Environmental Resources Management. The Environmental Protection Agency also monitors the implementation of the ESIA study (Government of Ghana 1999; interviews A21062010-3 and A14072010).

The Environmental Protection Agency was created in 1994 through the Environmental Protection Agency Act. This was preceded by a number of environmental disasters, specifically pollution of rivers by gold mining operations in the Ashanti region, and armed threats by villagers in the Western region to take action against mining companies in their village (Ofori 1991; Graham 1993). Following its establishment, the Environmental Protection Agency was tasked to develop an environmental impact assessment regime. This resulted in the 1999 Environmental Assessment Regulations, which defines two types of projects: those without the need to undergo ESIA and those that have to undergo one in order to obtain the environment permit (Government of Ghana 1999). Projects subject to a mandatory impact assessment include 'power generation' projects, and specifically 'dams and hydroelectric power schemes' (Government of Ghana 1999). Furthermore, the environment permit must be granted before a loan agreement can be signed (interview A21062010-3)

It is noteworthy that this mirrors China Exim Bank's *Guidelines for Environmental and Social Impact Assessments of the China Export and Import Bank's Loan Projects* of August 2007. Articles 12 and 13 lay down the regulations for environmental impact assessments in foreign projects. They specify that ESIA documents need to be drawn up before the loan agreement can be signed. They further say that the environmental laws of host countries form the basis of Exim Bank's evaluation of the environmental impacts of a project. However, when the host country lacks adequate environmental regulations, Chinese or international standards can be used. Article 12(4) also emphasizes the need for public consultation for projects with serious negative impacts, although what 'serious' constitutes is not further specified. Before the loan agreement can be signed, the borrower is required to submit to the Exim Bank the ESIA documents as well as the environmental approval documents. They therefore become part of the loan application (China Exim

Bank 2007). Indeed, according to a government official, the Exim Bank requested a full ESIA report, which was followed by a new round of loan negotiations (interview A30062010-1). Staff at the Environmental Protection Agency pointed out that the agency required the loan agreements to refer to World Bank guidelines regarding dam safety, resettlement, and forestry, to which Exim Bank agreed (interview A21062010-3).

Following these requirements, the Bui Power Authority applied for the environment permit to the Environmental Protection Agency. Subsequent to the Environmental Protection Agency's approval of the ESIA, the Agency issued the environment permit to the Bui Power Authority. While this occurred during the loan negotiations with China Exim Bank, the loan agreements were signed after the environment permit had been issued (interview A14072010). In the case of Bui, therefore, China Exim Bank can be said to have followed its regulations, at least as regards the formal process. The Bui Power Authority refused to comment on the quality of China Exim Bank's review process and only mentioned that the ESIA study and the environment permit were submitted to China Exim Bank by Ghana's Ministry of Finance and Economic Planning (interview A28062010-2). It is therefore also unclear to what extent Exim Bank scrutinized the implementation of its Article 12(4) on public consultation.

It is important to note that the environment permit forms the most basic of all permits that are required for project approval by Ghanaian government agencies. It is necessary so that the Bui Power Authority can apply for all other permits: the diversion permit, the construction permit, and the water use permit, all of which are issued by the Water Resources Commission; and finally, the licences for the operation of energy facilities, which are issued by the Energy Commission. Only then can construction begin (interviews A23062010-3 and A29062010).

Regarding norms and standards, Environmental Resources Management made extensive reference to both World Bank and Ghanaian norms by laying out in detail the stipulations of Ghana's 1999 Environmental Assessment Regulations, the World Bank Safeguard Policies for Environmental Assessment contained in Operational Policy 4.01, and the World Bank Environmental Assessment Sourcebook (Environmental Resources Management 2007a: i, 4, 149–150). Following Ghanaian and World Bank requirements, the ESIA study presented comprehensive baseline data in the project area on social conditions, natural resources, cultural and economic factors, the land tenure situation, a detailed project description with an assessment of alternatives, the impact on downstream communities and on Bui National Park, a plan for mitigating and monitoring environmental impacts, a provisional environmental management plan, and a decommissioning proposal. Perhaps most importantly of all, the study detailed the levels of public consultation, who was consulted and how, and to what extent the public's comments were incorporated in the study. Public consultations were organized by the Bui Development Committee (the predecessor of the Bui Power Authority) and the Environmental Protection Agency and its local offices (Environmental Resources Management 2007a).

This is the most controversial part of the ESIA study. While providing detailed descriptions of the consultations and the participants, NGOs criticized the report for the fact that no public consultations were held in the project area, but only in Ghana's capital Accra and in larger towns outside the project area where it is difficult for people from the project area to travel (interviews A22062010-1, A22062010-2). Furthermore, unaffected people from neighbouring villages outside the project area were allowed to comment, leading to concerns that the opinions of affected people might be side-lined (interviews A22062010-1, A22062010-2). In addition, the results of the public hearings are not legally binding. Yet, the national-level hearings were attended by an important cross-section of

social groups: representatives of Sinohydro, government agencies, local chapters of international NGOs, academia, and the media (Environmental Resources Management 2007b: Annex N).

Following the completion of the ESIA study in January 2007, the Environmental Protection Agency organized a technical review panel and announced publication of the report for twenty-one working days in public libraries, national newspapers, and local government offices in the affected districts. Following this, public and technical comments were sent to the Bui Power Authority with the request to have Environmental Resources Management revise the ESIA with regard to the following aspects (interview A21062010-3, Environmental Resources Management 2007a: 149–150, interview A21062010-3, interview A21062010-3): to advise on compensation for the flooding of 21 % of Bui National Park, to detail a management plan for the Park and for the rescuing of the hippopotamus population, to detail resettlement requirements, and to assess the impact on the Akosombo Dam located downstream (interview A21062010-3). Indeed, it is arguably these two factors—the flooding of a substantial part of the park and the difficulties of finding another habitat for the hippos—that led the government of Ghana to look for construction firms outside the developed North where the sustainability discourse and an alert media and civil society would have put governments and companies under considerable pressure had they agreed to finance and build Bui.

Following this, Environmental Resources Management made amendments accordingly and sent the report back—through the Bui Power Authority—to the Environmental Protection Agency. The agency subsequently approved the report and issued the environment permit to the Bui Power Authority, based on the anticipated environmental impacts during and after construction. However, the agency attached a number of conditions to the permit, including: the submission of a reporting schedule for water quality and resettlement, the submission of annual environmental reports, the presentation of an environmental management plan within 18 months of the issuance of the environment permit (the management plan has to be updated every 3 years), the reporting of changes to construction, flow regime, etc., the beginning of construction within 18 months of the issuance of the environment permit, and the obtaining of an environmental certificate that replaces the environment permit and in contrast to the permit is not based on anticipated impact but on actual performance. The environmental certificate is subject to renewal (interview A21062010-3). Compliance is monitored by the regional offices of the Environmental Protection Agency (interview A21062010-3).

In terms of the environmental impact assessment, Sinohydro is affected by these processes to the extent that it has to comply with the conditions that the Environmental Protection Agency attached to the environment permit.⁶ However, since Sinohydro is tasked with construction only, it is not involved in holding public consultations (which was done by representatives of the Bui Development Committee) or implementing resettlement work. Indeed, as regards the environment,⁷ the Engineering Procurement and Construction turnkey contract gives Sinohydro a limited and very narrow mandate related to the technical aspects of construction (Sinohydro Bureau 8 2009), while the environmental planning arrangements are entirely the responsibility of the government agencies. Yet, Sinohydro is bound by the norms contained in the ESIA as approved by the Environmental Protection

⁶ Sinohydro also has to comply with the conditions that the Water Resources Commission attaches to its permits.

⁷ Health and safety issues are important for the relationship between workers and Sinohydro but shall not be discussed at this point given the focus of the paper on the environment.

Agency. As permit holder, the Bui Power Authority is responsible for ensuring that Sino-hydro complies with the conditions.

Staff at the Environmental Protection Agency said that Sinohydro and the Bui Power Authority appear to adhere to the conditions. Similar statements were made by the Water Resources Commission, although staff there argued that construction of the dam was a political decision and could not have been prevented by either the Environmental Protection Agency or the Water Resources Commission. Indeed, the government pushed ahead with planning and construction of the dam despite concerns about the hippopotamus population and the fact that more than one-fifth of Bui National Park will be destroyed. The political pressure therefore left the environmental authorities with the only option to attach conditions to the environment permit and to monitor adherence as closely as possible (interviews A23062010-3 and A29062010).

Yet, there are wider implications of Bui for Ghana's economic development. Apart from the benefits of electricity generation, Ghanaian authorities hoped to boost their cocoa exports to China. Indeed, chocolate consumption in China is increasing particularly at the higher end of the market (*Shanghai Daily* 2008), and Ghanaian cocoa is a major export good and therefore source of revenue for the government in Accra (interview A30062010-1). Cocoa exports are tied to the financing arrangement for Bui, which consists of three lines of credits: a buyer's credit and a concessional loan provided by China Exim Bank, and a loan provided by the government of Ghana. The two credits provided by Exim Bank are the typical package-financing modalities that consist of a commercial and a concessional portion. Together, all three credits amount to US\$622 million, to which the Ghanaian government loan contributes US\$60. Exim Bank's buyer's credit is US\$292 million, with an interest rate of 2 % over Commercial Interest Reference Rates, with an amortisation period of 20 years and a grace period of 5 years. The concessional loan amounts to US\$270 million, with an interest rate of 2 percent, with an amortisation period of 20 years, and a grace period of 5 years (interview at the Ministry of Finance and Economic Planning, June 2010). Both facilities are of international standard.

To ensure repayment, Ghana's government agreed to secure the Exim Bank loans with cocoa (interview A30062010-1). Again, after the mixed-package financing, this is another feature of Chinese project financing: to secure loans with natural resources. The Chinese government commits to purchase an annual amount of 30,000 tonnes of cocoa at going world market prices until the dam is operational. The revenues go into an escrow account held by Exim Bank from which the interest is paid (during construction, only the interest but not the principal of the loan needs to be serviced). Excess funds in the escrow account revert to the government coffers. The cocoa agreement expires 5 years after the dam is operational, which is when the grace period expires. After that, revenues from electricity sales will be used to repay the interest and the principal. However, 85 % of energy sales revenues will again be placed into an escrow account with China Exim Bank, with the excess reverting to the government of Ghana when the funds are fully repaid (interview A30062010-1). In an analysis of the loan arrangements, the World Bank (2008: 6) commented that they are consistent with the Ghana Poverty Reduction Strategy II and that there is only a 'moderate risk of debt distress, albeit on the low side'.

Indeed, it appears that the Ghanaian government was aware of potential negative implications of the loan agreement on its debt situation. Before signing the loan agreements with Exim Bank, the Ministry of Finance and Economic Planning conducted a cost-revenue projection based on the sale of power at 4.5 US cents per kWh and a generation capacity of 400 MW. Since the calculation, energy prices have risen. An interviewee involved in the cost-calculation maintained that the Bui project, when operational, 'can pay

for itself' even at the originally calculated rate and 'therefore will not impact debt sustainability' (interview A30062010-2).

4 Conclusion

The paper had two core concerns: to investigate the relevance of the contractual conditions under which Sinohydro builds the Bui Dam and to examine the relevance of domestic institutions in project planning and implementation. The engagement of Sinohydro in Ghana is firmly embedded in China's Going Abroad policy. The Ghanaian government awarded Sinohydro the contract without an international bidding contest but following an offer submitted by Sinohydro to the government. Funding came from China Exim Bank. Funded as a mixed package (part concessional, part commercial), and backed by the export of cocoa beans, the Bui Dam financing structure also falls squarely within the Chinese development practice. For the company, Bui is a way to enhance its international visibility and its reputation as a company that can master complex engineering feats.

Despite all this, Sinohydro is bound by international norms. The Ghanaian government contracted the Chinese firm to execute pre-existing planning documents. In addition, the contract under which Sinohydro operates is a turnkey contract, meaning that Sinohydro builds the dam, but it does not operate it. After construction, the company hands the project over to the Bui Power Authority for operation.

It is therefore a situation in which Sinohydro is tied into a dense network of government planning procedures that appear to be largely adhered to. In other countries, Sinohydro along with other infrastructure companies may operate under very different conditions. In Cambodia, for instance, Sinohydro Bureau 8 is building the Kamchay Dam as a build-operate-transfer (BOT) project. This means that the company not only builds the dam but also operates it as a concession for 40 years before handing the project over to the Cambodian government. As a consequence, the incentive structure for constructing the dam is very different as the company will profit from selling the energy to the Cambodian utility Electricite du Cambodge. In addition, Cambodia's environmental impact assessment regime functions very differently as it is the duty of the project companies to commission and pay for the environmental impact assessment studies. Government oversight is scant, and the incentive structure for the company to commission the environmental impact assessment study is often to keep costs low and comply with government regulations in form rather than in spirit (Hensengerth [forthcoming](#); Grimsditch 2012; Middleton 2008; McCallum 2008).

The question of what norms apply therefore depends to a large degree on the precise contractual stipulations that determine the nature and scope of the involvement of the company during planning and implementation. It also depends on the domestic governance of host countries. Despite the political pressure exerted on Ghana's environmental bureaucracy, the country presents a comparatively positive example of how environmentally precarious investments might be steered in a better direction by an alert environmental bureaucracy (although Bui is still being constructed and the final environmental impact needs to be awaited). The case of the Bui Dam shows that international norms are by no means irrelevant to Chinese foreign investment projects. Furthermore, the fact that China Exim Bank has adopted an environmental policy and that, according to a Western representative of a research NGO in Laos interviewed in September 2011, Sinohydro Corporation is in the process of adopting an environmental policy (interview 08092011) shows the continued importance of global standards for environmental protection in

investment projects and an increasing interest of China's companies to adhere to international policy frameworks (Bosshard 2010a, b).

Indeed, normative processes have to be seen from a multi-level perspective. For Bui's environmental norms, global governance frameworks, governments of emerging countries, recipient governments, and the companies involved in planning and executing infrastructure projects interact in a process of implementing norms enshrined in a number of documents, in the case of this study the Ghanaian law and World Bank Safeguard Policies.

When evaluating the operation of Chinese companies, it is therefore necessary to consider the contractual arrangements under which a hydropower dam is constructed. Likewise, the domestic governance arrangement, the norms imposed by the host government, and the strictness of the monitoring system are factors that influence how China's revenue-driven companies implement hydropower projects. In the longer-term, it is precisely these factors that will determine whether the project assists a country's sustainable economic development.

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