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Design and Assessment of water-energy-food-environment Mega-Systems

Evolving lending regimes and the political economy of dam financing in Ghana

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Abstract

In the 21st century Ghana has seen the revival and construction of dam projects which had previously been stalled for decades as a result of financing constraints and socio-environmental concerns. What has enabled Ghana's contemporary dam-building revival? What are the risks and benefits? This paper examines Ghana's constructed dams across time through the lens of changing modalities and sources of finance. It charts the country's shift from traditional Bretton Woods mixed concessional/non-concessional bi- and multilateral lending in the 1960s in its early post-independence period to the introduction of bilateral resource-collateralised loans from China from the 1990s to the present, as well as its more recent reliance on the use of parallel offshore commercial financing in the form of Eurobonds. These changes in the scale, availability and varying modalities of external financing in the 21st century have presented a host of new challenges for Ghana, particularly in the area of public accounting and economic management. New opportunities for dam financing in the country carry with them significant short- and long-term risks and consequences. The study situates Ghana within a wider universe of comparative cases involving resource-backed loan arrangements with China for infrastructure. A closer look at the Ghanaian case highlights the ways in which the country's use of commodity-collateralised or commodity-barter export arrangements with China differ from hydrocarbon-for-loan-type cases in other parts of Africa and Latin America. Pro-cyclical spending at disadvantageous terms, driven by high-stakes electoral competition, willing external partners and a global commodity boom has enabled contemporary Ghana to construct new dam projects at the risk of significant negative fiscal, social and environmental effects. Its overwhelming debt, tied to US and EU bond repayment, in addition to resource-collateralised bilateral lending with China, uniquely distinguishes Ghana from other African resources-for-infrastructure borrower cases. Ghana is at the forefront of the African Eurobond market and of a twin OECD- and Chinese-externally financed spending spree.

Keywords

Eurobonds, Dams, Commoditisation, Akosombo, Bui, Volta

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G32, O16, P16

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Contents

1 Introduction

In the 21st century, Ghana has seen the revival and construction of dam projects which had previously been stalled for decades as a result of financing constraints and socio-environmental concerns (Tsikata, 2006; Miescher, 2014b). After a 30-year gap since it commissioned the Kpong dam in 1982, Ghana commissioned the Bui hydropower dam in 2013, followed by the ground breaking of the Pwalugu dam in 2019 and its ongoing construction (VRA, 2020).

Ghana's dam-building revival has happened against a national economic backdrop of a contemporary domestic commodity boom-and-bust period and continuing spiralling fiscal deficits (IDA–IMF, 2019), made worse by the shock of the global Covid-19 viral pandemic (Aman, 2020). While the country was already a historical commodity exporter with a long colonial legacy of producing gold and cocoa, the discovery of 'black gold' oil reserves off the coast of its western region in 2007 transformed the developmental aspirations and expectations of Ghana's governing elite, as well as its relationship to international private and sovereign lenders and other domestic actors.

Ghana's renewed 21st century energy and infrastructure development plans have also occurred within the wider international context of a historically unprecedented global commodities super-cycle from 2000 to 2014, which saw the triple boom of hard, soft and mineral commodities linked to rising demand from emerging markets, particularly in China (Jepson, 2019). A number of studies have documented China's engagements with Ghana over the financing and construction of the Bui dam (Han, 2017; Hensengerth, 2012; Kirchher et al, 2016; Urban et al, 2015). This existing literature has, however, not analysed recent Chinese lending and dam-building engagements in Ghana within a deeper political economy context of changing international financing regimes and Ghana's evolving methods of managing and coping with the political and economic ramifications of financial windfalls and international volatility.

We examine Ghana's constructed hydropower dams across time through the lens of changing modalities and sources of finance. This builds on FutureDAMS research into the changing actors, terms and modalities of dam finance in the 21st century (Markkanen et al, 2020; Souvannaseng, 2021). It charts Ghana's shift from reliance on traditional bilateral and multilateral mixed concessional/non-concessional development finance lending in the 1960s during its initial post-independence period to the introduction of bilateral resource-backed loans from China from the 1990s to the present, as well as its more recent reliance on the use of parallel offshore US and European commercial financing in the form of Eurobonds. Ghana's rebasing from 'low income country' status to 'middle income country' status by the Bretton Woods institutions in 2010 has affected its terms of access and engagement with international financial institutions.[1] Significantly, there has been a broader international trend across creditors of the OECD and beyond, including China, to largely reduce access to concessional lending to developing country borrowers.[2] Chinese assistance to Ghana between the 1990s and 2020 has shifted away from concessional lending to largely

[1] For more on rebasing, see Edward and Sumner (2018).
[2] For more on the transformation of aid to trade see Mawdsley (2018). On the financialisation of aid see Gabor (2018).

commercial terms, while, by some estimates, the World Bank has made loans to Ghana that should have been grants according to its own rules, to the tune of US$1.4 billion (Jones, 2016).

We find that changes in the scale, availability and varying modalities of external financing in the 21st century have presented a host of new challenges for Ghana, particularly in the area of public accounting and management. On the one hand, potential creditors have offered new ways to collateralise and commoditise Ghana's natural resources – such as oil, bauxite and cocoa – creating new streams of financing for infrastructure building. Soft loans, concessional lending, grants and aid which were more commonly accessible in the 1960s and 1970s have become nearly unavailable in more recent times. China, which operates outside the Paris Club, has over time switched from aid and grant lending in Ghana to commercial terms. China mitigates its lending risk in Ghana through its use of resource-collateralisation and barter arrangements, essentially ensuring that it is prioritised in the order of creditors for payment by *ex ante* earmarking future revenue into its loan agreements. The World Bank has facilitated and encouraged the Ghanaian government to take on Eurobond sales to finance its infrastructure projects with very expensive terms of repayment. Interest payments to bond holders is the leading category in Ghana's debt profile, dwarfing its monthly payments to multilateral and bilateral lenders combined (World Bank, 2021). At an average rate of 9% (Adam & Mihalyi, 2017), Ghana's interest payments to private bond holders is punitive, as compared to those imposed on Kenya (5.875%, 6.875%) and Senegal (6.25%), for example (Olabisi & Stein, 2015). The World Bank made available a $400 million guarantee to creditors, which has increased the difficulty for Ghana's government of re-financing or defaulting on its loans.

While changes to the international financing landscape and separate domestic and global commodity booms explain some of the supply side aspects which have facilitated the financing and building of contemporary dams in Ghana, they do not tell the whole story. Neither does the existing literature on Chinese dam building and lending in the country (Han, 2017; Han & Webber, 2020; Hensengerth, 2012; Kirchher et al, 2016; Urban et al, 2015). Some studies have looked at the recent discovery of oil and its impact on Ghanaian democracy (Gyimah-Boadi & Prempeh, 2012); others have compared Chinese–Ghanaian oil and dam-building projects (Odoom, 2015) and examined whether recent resource discoveries and windfalls might set off Dutch-disease or 'resource curse' sequences in Ghana (Kumah-Abiwu et al, 2015; Mihalyi & Cust, 2017).

This study contributes to the existing literature on dam building in Ghana in two significant ways. First, it contributes a political economy analysis of dam financing and widens the scope of research to incorporate OECD and Chinese (non-OECD) creditors within the same comparative frame of analysis. Second, we connect our analysis of dam finance to domestic institutional factors and political drivers, giving a clearer picture of how and why Ghanaian political actors have pursued expensive infrastructure projects in the midst of worsening economic conditions. Access to external finance and domestic political pressure to win four-year election cycles account for spiralling government deficits and pro-cyclical spending, as commodity revenues have declined significantly following the end of the 2014 global super-cycle; they are continuing to worsen because of international logistical disruptions under Covid-19, as we discuss further in section three.

The study marries the literature on the domestic political economy of development in Ghana with a hydro-finance lens to explain Ghanaian hydro-infrastructure outcomes across time. Moreover, it situates Ghana within a wider universe of comparative cases involving resource-backed loan arrangements for infrastructure with China (Bräutigam & Gallagher, 2014; Wingo, 2020). A closer look at the Ghanaian case highlights the ways in which its use of commodity-collateralised or commodity-barter export arrangements with China differ from hydrocarbon-for-loan-type cases, dubbed the 'Angola model' or the Venezuelan 'oil for loans' model in other parts of Africa and Latin America. As international politics heats up within the development finance realm between the World Bank and China's policybanks like the China Development Bank and its Export–Import (Exim) Bank with regard to African debt and the economic toll of Covid-19, we find that the Ghanaian case differs from other African cases in important ways. Ghana's bonds constitute over half the total African Eurobond market (Adam & Mihalyi, 2017; World Bank, 2021).

By taking a political economy approach to hydro-finance, our account demonstrates how long-run perennial features inherent in Ghana's political institutions, such as limited parliamentary and citizen oversight of public finances, pro-cyclical spending driven by high stakes electoral competition and willing external partners who lend at disadvantageous terms, have enabled contemporary Ghana to finance and construct new dam projects that carry significant fiscal, political and socio-environmental risks and trade-offs.

Our cases illustrate how these factors interact to make possible the financing and building of contemporary dams in Ghana in a manner that was not feasible two decades before the 21st century. We argue that the ways of securing and managing financing to bankroll this phase of infrastructure development situated at the water–energy–food nexus comes at the risk of significant short- and long-term fiscal peril and large-scale social and environmental risk. These infrastructure outcomes reflect the uneven power between different branches of government, as well as between state and society in Ghana today, and the uneven distributional impacts of contemporary Ghanaian dam development. We also find that, contrary to mainstream media and scholarly focus on contemporary Chinese creditor relations with poorer borrowing governments, which highlight 'debt trap diplomacy' and fiscal sustainability (Bräutigam, 2019), in Ghana the debt that is adversely crushing its economy and pushing it into debt distress is tied to bond repayments to UK, EU and US private creditors who have been assisted and incentivised by World Bank partial guarantees. From a fiscal standpoint, this distinguishes Ghana from other African resources-for-infrastructure borrower cases and highlights the importance of holistically widening the scope of analysis to encompass the full range of financiers and lending arrangements which have enabled Ghana's dam- and infrastructure-building ambitions.

The paper proceeds as follows: the next section is an extended literature and background discussion of Ghana's political and economic history. In section three we discuss each of the four hydropower dam cases. This is followed by a concluding discussion in section four.

2 Developmental mindsets, executive power and economic instability: the political and economic contexts of Ghanaian dam building

2.1 Developmental mindsets and mandates

When the Ghanaian president broke ground to inaugurate the start of the Pwalugu Multipurpose Dam and Irrigation Project (PMDIP) in the country's northern region on 29 November 2019, he did so against a backdrop of serious economic fragility. IMF projections from the same period held that Ghana's debt load for 2019 stood at 66.5% of GDP and would increase to 68% in 2020, placing the country's economy in the serious debt distress category with declining growth even before the arrival of the Covid-19 pandemic (IDA–IMF, 2019). By April 2020, the IMF had disbursed a $1 billion loan from its Rapid Credit Facility to Ghana as the economic impact of Covid-19 began to be felt in declining international demand for oil and cocoa, and major international logistics disruptions created a pile-up of thwarted gold exports in Accra (Aman, 2020; IMF, 2020).

The Ghanaian government had embarked on an ambitious and expensive national infrastructure expansion campaign, including road, rail and dam projects, since winning the presidential election in 2016, even amid the backdrop of poor domestic economic indicators (Aryeetey & Baah-Boateng, 2016). The current administration has relied on offshore private lending from the sale of Eurobonds and a $2 billion bauxite-for-infrastructure resource-backed loan with the Chinese policy banks in 2018. In the same year in which Pwalugu broke ground, the president confidently touted in his spring State of the Union address that the placement of Eurobonds in 2018 and 2019 were markers of foreign economic confidence in Ghana and indicated long-term stability. From a public-finance standpoint, the trend towards market financing via bond sales and large-scale resource-backed bilateral loans with China indicates a lack of access to concessional lending from creditors; this has allowed non-resident institutional investors to own up to 26.6% of domestic debt (IDA–IMF, 2019). Offshore private lending shortens debt maturity windows and raises the nominal interest rate on external debt. In Ghana said rate has risen from 5.5% in 2017 to 7.6% pre-Covid-19 (IDA–IMF, 2019). Ghana's previous 2007–16 bond sales averaged roughly 9% in interest rates and some have already started to reach maturity (Adam & Mihalyi, 2017).

The current government's push for a rapid expansion in spending and expensive infrastructure projects, like the Pwalugu dam, amid a backdrop of domestic economic difficulties and rising external debt relations is not entirely new and has a historical pattern in Ghana. Each of the country's four hydropower dams – Akosombo (commissioned 1963), Kpong (1982), Bui (2011) and the currently under construction Pwalugu – have been built against the backdrop of difficult domestic economic conditions. When Akosombo was completed in 1963, Pwalugu and other dams were meant to form part of the same development package under Kwame Nkrumah. However, Pwalugu stalled and then languished as a result of severe economic instability from 1960 to 1982; it was not completed for another 53 years. By the time Nkrumah was deposed in 1966, according to Olajide Aluko (1977):

> The national debt had risen to over $400 million…balance of payments which had been in deficit since 1957 took a turn for the worse in 1965 with a record deficit of NC227 million. In fact, by then, the economy had groundto a halt with the growth rate of only 0.6

> percent as against the target of 5.5% laid down in the Seven-Year Development Plan 1963/4-1969/7.

When Kpong dam went into commission in 1982, postcolonial Ghana had gone through five military coups, three civilian governments and serious economic crisis between 1960 and 1982, as cocoa prices dropped throughout the 1970s and inflation ran rampant. Between John Rawlings' three-month military interregnum in 1979 and his return to overthrow the civilian Limann government in 1982, salaried unemployment was beyond 44%, inflation was 22.3% in 1982 and 122.9% in 1983 and the national debt had increased by £100 million in the midst of recession (World Bank, 2020; Agyeman-Duah, 1987). When the Volta River Authority (VRA) commissioned the first feasibility studies and tried to line up Bretton Woods financing for the Bui dam project in the 1990s, Ghana was experiencing its historically lowest economic growth at 3.3% in 1994, followed by further unstable growth for the rest of the decade (Aryeetey & Baah-Boateng, 2016). Even by 2003, in the midst of the new millennium and a global commodity boom, when Western financing withdrew from the Bui project over socio-environmental concerns, Ghana's growth rate stood at roughly 5%, coming to a halt by 2009 at 4% after the 2008 global financial crisis.

How should we understand this pattern of Ghanaian dam building, despite economically lean times? What explains the willingness to spend on expensive projects during times with empty and overextended coffers? Exogenous factors such as the international lending environment and external creditors play a role in terms of supply and access to financing, but in this section we highlight two further endogenous factors to the Ghanaian context that interacted with external lending regimes over time: developmental ideology and political institutions.

Elizabeth Thurbon has described successive administrations of the South Korean government in the wake of the 1997 Asian Financial Crisis as partaking in a concerted effort to rebuild the national economy through persistent financial activism, driven by what she terms a, 'developmental mindset' among South Korean bureaucrats, business actors and the political elite (Thurbon, 2016). Thurbon's account points to the role of political culture and the interplay of history and ideology in shaping path-dependent discourses and decision making among domestic political actors. In the Ghanaian case, particularly in the context of dam building, the legacy of the Nkrumah era's postcolonial nation-building efforts is persistent. At the November 2019 Pwalugu ground-breaking ceremony, President Akufo-Addo declared:

> this will be the single largest investment ever made by any Government in the Northern sector of the country…today, we begin the process of realizing this pledge. Today, we start the process of helping to bring respite to the people of the Northern Regions of our country, and to lay the foundation for the sustained growth and development of the area (Communications Bureau, 2019).

The president's statement was a discursive harking back to the unfinished developmental ambitions of the Nkrumah era.[3] It had taken over five decades since the original plans for the Pwalugu dam project emerged in that era for the project to break ground in 2019, but the

[3] For more on the Nkrumah developmentalist agenda and its legacy, see Miescher (2014a).

importance of water, and particularly the water–energy–food nexus, as a lynchpin of the goals of structural transformation and socioeconomic development of Ghana's governing elites has remained a continuous thread across successive political regimes, crossing the civilian–military and bipartisan New Patriotic Party (NPP) National Democratic Congress–(NDC) divide.

The main fault lines over dam building lie between civil society and the political establishment, not between political parties. Dams have been built under both the genealogical successor coalitions of what Whitfield has characterised as the Danquah-Busia and Nkrumaist traditions, which are reflected in the contemporary NPP and NDC parties (Whitfield, 2011). This illustrates the hegemony of hydro-developmentalism within the Ghanaian political imaginary. Han and Webber's (2020) account of continuity across the building of the Akosombo, Kpong and Bui dams primarily foregrounds the technocratic role of the VRA and the Bui Power Authority as the primary domestic institutions able to steward projects and provide continuity across time while liaising with domestic and international actors. Nevertheless, their 'dam assemblage' framework – essentially a sociological account of international operators, financiers and water governance bodies – leaves out important political analysis of the key Ghanaian decision makers and interlocutors who determine whether and when dams are built – primarily, the executive branch of government, to which we now turn.

2.2 Executive power, easy finance and dam building in Ghana

Across Ghana's four hydropower dam cases – Akosombo, Kpong, Bui and Pwalugu – the key agents who have been able to politically steward projects towards ground breaking, past the opposition of quarters of civil society and parliament, have been executive actors. There is a rich literature on the lasting legacy of Ghana's political constitution; the deficit between its legislative laws and political institutions; and the impact of its constitution on the uneven distribution of power between branches of government (Agyeman-Duah, 1987; Gyimah-Boadi & Prempeh, 2012; Kopecký, 2011; Whitfield, 2011), which has been largely ignored by the extant dam literature on Ghana.

The neglect of the overwhelming power of the executive as a key, if not *the* key, actor in realising dam projects can therefore only give a partial account of the timing of dam projects and when they come into being. Extant accounts of the Bui case, for example (Han, 2017; Han & Webber, 2020; Hensengerth, 2012; Kirchher et al, 2016; Urban et al, 2015), have primarily focused on the role of Chinese policy banks as a creditor and on the overlapping of the 2007 financial deal for Bui with China's 'Go Out' strategy. Such accounts flatten Ghana and its internal political dynamics to what is merely described as a 'host country' or site for Chinese agency. This implicitly suggests that exogenous actors and their material resources dictate the causal chain and timeline for dam building in Ghana. Some works have centred China's agency within dam-building accounts, even going so far as to subsume the wide array of domestic and international actors ontologically under the notion of a 'Chinese Water Machine', erasing the social politics of key domestic actors.[4]

[4] See Webber and Han (2017).

Ghana's president controls most of the legislative timetable and agenda. In the context of the country's dam building, this is evident in the president's presiding over the sod-cutting ceremony for Pwalugu in November 2019 before the multi-ministry legislation and agreement over financing details had even been approved by parliament. The bills relating to the PMDIP were rushed through parliament in late February 2020 over vociferous calls for an audit of the project from the opposition party (CNR, 2020). The supremacy of the executive is so enshrined in political tradition and Ghana's constitution as to render parliamentary oversight of executive conduct and performance extremely weak. Although the constitution allows for formal investigative powers by parliamentary committees, none has ever launched an inquiry into allegations of mismanagement or appropriation of public funds (Gyimah-Boadi & Prempeh, 2012). When oil reserves were discovered off Ghana's western coast in 2007, the Petroleum Commission Act was passed in 2011 to reflect popular demand for an independent body to oversee the activities of oil companies (Kumah-Abiwu et al, 2015). Even though civil society has pressed for contracts and licences to be awarded through open and competitive bidding rather than negotiation (Gyimah-Boadi & Prempeh, 2012), both the Bui and Pwalugu engineering, procurement and construction (EPC) contracts have been sole-sourced to Sinohydro/Power China International Group without open tender or a competitive bidding process.

Ghana's move to multiparty elections and democratic consolidation of two-term presidential limits dates back to 1992. To understand which financiers and what terms of financing ultimately reach signed agreement with the government and to understand when dam-building projects are more likely to move from the page into built reality requires acknowledging the importance of four-year election cycles in influencing short-term politics and pro-cyclical spending on expensive and symbolic development projects to win office and control power. The zeal with which political actors have sought to implement and claim political sponsorship for dam projects in the midst of short- and long-term fiscal weakness suggests the weakness of the National Development Planning Council (NDPC) as an autonomous body. It is subject to control and staffing by political appointees and thus to electoral labour turnover. Political turnover has the effect of creating *ad hoc* politically motivated projects which contravene cohesive strategic development policy planning. The aforementioned literature on dam building in Ghana has emphasised the role of China to the neglect of explaining why the Bui deal came to be in 2007, on the eve of the 2008 election, the most closely contested presidential race in Ghana's history to date. Nor does the extant literature explain why Pwalugu broke ground in 2019 before it had even been reviewed by Parliament.

The literature on the impact of the building of Akosombo, Kpong and Bui on local communities is replete with accounts of the uneven and unjust distributional power and impact of dam-building projects in Ghana (Koranteng & Shi, 2018; Miescher, 2014b; Tsikata, 2006; Yankson et al, 2018). Meso-level analysis of executive power, and the ways in which political institutions allow presidential authority to be wielded in the context of dam-building projects, coupled with an acknowledgement of the ideational and political factors driving the pursuit of such projects, helps to build a fuller account. It fills the gap between the extant 'China–host country' discourse, which renders Ghana as merely a site of capital – and micro-level studies at the livelihoods level documenting the *ex post* social and environmental impact of Ghanaian hydropower projects. Incorporating the political institutional factors

which *ex ante* shape the timing, geopolitical and financial arrangements around dam projects sheds light on the ways which dam building in Ghana continues *de facto* to reify and strengthen the centralisation of power *vis-à-vis* ongoing efforts towards devolution and decentralisation. Although Ghana has a formal policy of decentralisation, the president appoints a third of the voting members of metropolitan, municipal and district assemblies nationally, as well as all local mayors (Gyimah-Boadi & Prempeh, 2012). The power of the executive to appoint, and the power of the purse to allocate central resources to local authorities jeopardises the system of checks and balances and participatory governance mechanisms which might intervene to slow down or halt dam projects that have widespread negative economic, social and environmental effects.

This section has discussed the importance of two endogenous factors which shape the timing and nature of dam projects in Ghana. In the next section we discuss the four dam cases, the modalities and terms of finance for each case and the implications of the interplay of changing development lending regimes with Ghana's political actors.

3 Financing of dams in Ghana

In this section we present financial breakdowns of Ghana's four hydropower cases: Akosombo, Kpong, Bui and Pwalugu. Ghana's first two hydropower dams – Akosombo and Kpong – which were commissioned in 1963 and 1982, respectively, were financed through large concessional grants and loans from Western bilateral partners and Bretton Woods institutions. Ghana's latter two dams, Bui and Pwalugu, were financed and constructed in the 21st century following three significant changes to the international financing landscape. First, there has been an overall shift away from the availability of concessional grants and loans from OECD - Paris Club creditors and non-OECD creditors like China towards commercial terms of lending. Second, the modalities of dam lending have evolved from the simple multilateral project finance of the 20th century.[5] Bretton Woods financial institutions and Western creditors have substituted traditional concessional lending with non-concessional financialised sovereign debt in the form of long-term sovereign bond sales to private institutional investors in the US and Europe.[6] Third, the array of external creditors has expanded beyond the Bretton Woods institutions and Western donors to include bilateral lenders from the emerging market countries that make up BRICS (Brazil, Russia, India China, South Africa). The most active in scale among these is China, which operates outside the Paris Club and which utilises resource-backed loan arrangements that collateralise or barter domestic resources for access to finance.[7]

The universal decline in the availability of concessional lending on offer for countries like Ghana in the development finance space marks the most defining feature of the post-World War II era and the contemporary international lending regime.[8] While Ghanaian leaders have financing options available that did not exist in the days of structural adjustment in the

[5] For more on this, see Markkanen et al (2020).
[6] For more on the financialisation of development and infrastructure as an asset class, see Gabor (2019).
[7] For further literature on this, see Bräutigam and Gallagher (2014) and Wingo (2020).
[8] For more on this trend and the decline of aid and OECD-DAC lending, and the rise of financialised development lending, see Mawdesley (2018) and Gabor (2019).

late 20th century, such as access to offshore private capital markets or Chinese policy banks, the financing that is available overwhelmingly favours international creditors *vis-à-vis* developing country borrowers. In addition to declining absolute volumes of concessional assistance, the rebasing of Ghana's GDP in 2010 has pushed it into being considered a middle-income country, and significantly changes the terms of access to finance it has with international creditors.[9]

While many African nations and developing countries in other regions have pursued resource-backed loans with China, Ghana's bilateral agreements with that country in terms of commodity collateralised loans have been limited to three instances: the use of cocoa in 2007 for the Bui dam; an oil-collateralised deal for $3 billion which Ghana did not draw from halfway through in 2011, and a controversial $2 billion bauxite-for-infrastructure barter agreement in 2018, by which Sinohydro will provide construction of infrastructure against refined bauxite proceeds. The Ghanaian government will transfer liability for the bauxite deal to the Ghana Integrated Aluminium Development Corporation (GIADC). While both Bui and Pwalugu dams will be built by a Chinese contractor, Ghana is unique among African nations in that most of its external debt repayments are to private institutional investors from the sale of Eurobonds. Contemporary Ghana straddles the financing landscape between the Bretton Woods institutions and China. Its bilateral arrangements with China are made off-balance sheet in the form of resource-collateralised loans.

Dams in Ghana remain government owned and guaranteed, rather than privatised. What has emerged from the information provided by our interviewees is that the pursuit of external financing of hydropower dams in Ghana has been led at the behest of the Ghanaian government and high-level representatives, in order to secure financing across the international lending landscape (R4, 12 July 2019). The first two projects, Akosombo and Kpong, used multilateral project finance at concessional rates, and aid. The latter two have instead shifted to different financing mechanisms, with Bui using a semi-concessional mechanism and a cocoa-collateralised loan facility while the Pwalugu dam is likely to be funded by the general sale of Eurobonds at commercial rates. While Ghana took out $1.5 billion of a potential $3 billion resource-backed loan with China in 2011 using Jubilee oil reserves, it only withdrew the first tranche of the loan facility, and it cancelled the second. In 2018, it took on a $2 billion resource-backed loan using its bauxite reserves in a package-portfolio resource-for-infrastructure barter arrangement with Chinese policy banks and Sinohydro.

The Ghanaian case remains different from that of other African countries, which have pursued what has been called the 'Angolan model' of resource-for-loan financing arrangements. The semi-concessional terms for Bui were collateralised with cocoa proceeds when prices were fairly high. Later resource-collateralised loans in oil were partly cancelled just before the global commodity crash of 2014. The most recent bauxite-for-infrastructure barter deal in 2018 resembles the Angola model more than others because of the earmarked access to revenue from refined bauxite baked into the agreement. However, Ghana's staggering external debt load remains dominated by repayments to private

[9] For more on rebasing and its adverse effects on developing countries, see Aluko & Oyebode (2015); UNDP (2014). .

sovereign bond holders, which makes the country distinct among its continental neighbours. Ghana's bond sales constitute over half the total African Eurobond market (Adam & Mihalyi, 2017).

3.1 Methodology

In order to achieve its objectives, the study started with a desk review of documents and other research works relating to large and other dams in Ghana. This enabled the identification of relevant secondary material and issues that guided key informant interviews and the presentation of the results. The researchers purposively selected respondents from four institutions in Accra. Two of the institutions were public bodies (Ministry of Energy and Bui Power Authority); the other two were civil society organisations (the Integrated Social Development Centre (ISODEC) and the African Centre for Energy Policy (ACEP)). Two key informants from each of the public institutions were selected and an informant each from the civil society organisations. The interviews were transcribed and analysed with regard to the key questions. The discussion of the results was also augmented with a review of related information from the media, think-tanks and other public interest groups. The interviews and review of documents reveal how financing mechanisms and financiers have changed over time across the cases, and what the implications are for Ghana.

Akosombo Dam

Akosombo is the largest of the three hydroelectric dams in Ghana, and covers an area of 8,502 square kilometres, with an installed capacity of 1,020 MW of power. The dam is managed by the VRA, which was established under the Volta River Development Act, 1961 (Act 46). The Authority's first hydroelectric plant at Akosombo has six generating units. Four of the units, with a total installed capacity of 588 MW, including a 15% overload capacity, were completed in 1965 and the additional two, with installed capacity of 325 MW, including a 15% overload capacity, were completed in 1972.

The financing for this dam was provided by the Ghanaian government, by multilateral institutions and by private financial institutions, all from Western development partners, as itemised in Table 1. The total cost of the project was $196 million, with the government providing half of the amount through its reserves and revenue. The remainder came from borrowing from various lenders (International Bank for Reconstruction and Development [IBRD] 1961). The distribution in Table 1 shows that Ghana's first hydroelectric dam was financed through multilateral and bilateral arrangements.

Table 1: Financing of Akosombo hydroelectric dam

Source	Amount (US$m)	Debt/Equity	Interest rate	Grace period (years)	Amortisation period (years)
IBRD	47	Debt	0.5–5.75%	6	25
US					
Development Loan Fund	27	Debt	3.5%	6	30
Export–Import Bank	10	Debt	5.75%	6	25
UK					
Export Credit Guarantee Department	14	Debt	Determined when funds are drawn	6	25
Total	98				

Source: IBRD (1961); Loan Agreement between international Bank for Reconstruction and Development and Volta River Authority (1962).

The funding arrangement required the government to sell electricity at a discounted rate to Kaiser Aluminum, which was the main owner of the Volta Aluminium Company (VALCO) with a smelting plant in Tema. This plant was part of the project. The discounted rate for selling electricity to VALCO was renegotiated in 1984 to approach market value. The total cost of the Akosombo Dam project was estimated at over GH¢552 million ($258 million). This sum was to cover the cost of the dam and power installation (at Ajena), the opening up and equipping of the bauxite mines and a complete plant (VALCO) for producing aluminium, as indicated by Miescher and Tsikata (2009). Data available from the VRA show that the first net profit from the dam was realised in 1982, followed by a loss in 1983 (VRA, 1983). Since then there have been periods where the VRA has operated at a loss as a result of the distributor, in this case ECG, being unable to recover sales and subsidies not reimbursed by the government; these were compounded by politically motivated low tariff rates which do not meet the baseline for cost recovery. In periods where it has made profits, there is no clear pattern to the losses and profits. VRA data also suggest that, as of 2017, the VRA had repaid debts from the Akosombo project.

Kpong Dam

The Kpong hydroelectric project, which represents the third stage in the development of the Volta River, commonly known as the Volta River Project, is the third largest dam in Ghana, with a total installed capacity of about 160 MW. The Kpong generating station was completed in 1982. The combined Akosombo/Kpong system has an installed capacity of 1,180 MW, with the Kpong dam operated in tandem with Akosombo as a run-of-the-river

plant. The combined energy output from the Akosombo and Kpong hydroelectric dams in 2019 was 6,208GWh (VRA, 2019).

While Miescher and Tsikata (2009) indicated that the estimated cost was $260 million, records provided by VRA show a much higher figure of $375.7 million at the time of the project's completion, as a result of delays and changes in input costs (Table 2). A total of eight funding agencies with loans in five denominations were involved. The local cost was financed by the VRA, and the international financial agencies, as shown in Table 2.

Table 2: Project cost for Kpong hydroelectric dam

Funding source	**Amount (US$m)**	**Equity/Debt**
Kuwait Fund	28	Debt
Saudi Fund	30	Debt
BADEA	15	Debt
European Investment Bank	11	Debt
European Commission	10	Debt
Canada International Development Agency (CIDA)	35*	Debt
World Bank	39	Debt
Local cost	178.5	
Balanced deficit financed from VRA resources	11.8	

Note: *Canadian dollars

Sources: *International Bank for Reconstruction and Development (1977); VRA Annual Reports, 1977, 1978, 1979, 1980, 1981, 1982).*

The funding sources in Table 2 show that, as for the Akosombo Dam, where the Ghanaian government financed 50% of the cost, some 50% of the cost of the Kpong hydroelectric project was also financed by the government and/or local sources. The table also shows that the origins of the non-local sources of funding were quite diverse, from both Western and non-Western partners.

Bui Dam

Ghana's second largest dam, the Bui Dam, which was commissioned in December 2013, was, at the time of commission, the largest Chinese-funded project in the country and the largest foreign investment in Ghana since the construction of the Akosombo Hydroelectric Power Project in the early 1960s. Although the dam's actual construction began in 2008 and was completed in 2013, it took over 50 years to implement the plan, undertake negotiations and scout for funding before the dream could be realised. Inconsistent amounts have been

provided by different sources as the cost of the project. Hensengerth (2013) and Miescher and Tsikata (2009) have quoted the cost at $622 million, Odoom (2015), citing the Bui Power Authority, quoted $790 million. After lengthy processes, comprising international competitive bidding, negotiations and withdrawals, the government ultimately secured a hybrid credit facility agreement with China (Odoom, 2015). In 2007 Sinohydro submitted an unsolicited bid for the construction of a 400-megawatt hydroelectric dam as a separate entity from the VRA, and under the Bui Power Authority (BPA). The project included a roller-compacted-concrete dam and three generating units.

BPA's online figures claim that the project was variously funded by the Ghanaian government through counterpart funding of $60 million and a concessional loan of $263.5 million, as well as a buyer's credit of $298.5 million from the Chinese Exim Bank (www.buipower.com). However, in our research calculation, the breakdown of Bui loan financing in government financial records derived from the project's public budgets are as indicated in Table 3.

Table 3: Bui Power Authority loan schedule

Loan description (from China)	Loan date	Debt/Equity	Repayment start date	Expected repayment date	Amount (US$)	Interest rate (%)
Buyer's credit – 2007 (commercial)	9/25/07	Debt	21/5/2014	21/11/25	293,506,601	5.9448
Buyer's credit – 2012 (commercial)	11/21/12	Debt	21/5/2014	21/11/25	76,206,939	Libor + 4
Concessional – 2007	9/3/08	Debt	21/5/2014	21/11/25	268,500,000	4
Buyers credit – 2012	4/30/12	Debt	21/5/2014	21/11/25	75,353,060	2
Total					713,566,601	

Source: Field Work, (2019).

The figures in Table 3 reflect a different project cost from that shown on the BPA website. A few more, slightly different details were provided by a key informant (R2, 11 July 2019) from the BPA. The government negotiated separately and secured two types of loan for the construction of the Bui Dam as a package. In 2007, it negotiated a buyers' credit loan of $293.5 million from the Chinese Exim Bank, with a repayment start date in 2014 and expected repayment completion in 2025 (R2, 11 July 2019).

Those interviewed described the loan as structured to ensure that the proceeds from the sale of power by BPA would be used to pay off the loan (interest plus amortisation) by 2023 (R2, 11 July 2019). The concessional loan of $268.5 million in 2008 had a repayment start

date in 2014 and repayment completion date in 2025. A key informant (R2, 11 July 2019) added, however, that, during construction, it was determined that the, “project cost had to change due to changes in project design and negotiation” – hence the need for additional funding ($151.6 million), comprising a concessional loan of $75.4 million and a buyer’s credit of $76.2 million. There was also an equity contribution by the government ($60 million), in the form of providing the initial capital for the mobilisation of the equipment by the contractor, which was required to demonstrate government’s commitment to the project.

The additional funding was obtained on the same terms as the initial loan and credit, and was also made up of three contributions – a new concessional loan agreement between the Ghanaian government and the People’s Republic of China, a buyer’s credit from the Chinese Exim Bank of China and a contribution from the Ghanaian government (R2, 11 July 2019; see also Table 3). It must be noted that information on this additional funding is missing from the BPA website. Furthermore, there are differences between the buyer’s credit and concessional loans on the website ($298.5 million and $263.5 million) and the figure provided by the key informant ($293.5 million and $ 268.5 million). The buyer’s credits and concessional loans were reviewed by the Ministry of Finance to ensure they were within the country’s overall debt threshold (R2, 11 July 2019).

Notably, the Bui Dam project was financed through a resource-secured loan and a hybrid finance facility (Odoom, 2015). Odoom argues that the innovative financing scheme shows how Chinese officials can combine different financial instruments to support a large project. Part of the instrument was to be financed using cocoa exports as collateral, with the other part to be financed from the proceeds of the sale of power. Part of the finance might qualify as official development assistance, but not the entire package.

This financial structuring also provides some insight into the way in which Chinese banks can secure their loans with decreased risk – a resource–backed arrangement that allows them to provide more debt finance than might otherwise be the case. In this respect, Bräutigam and Gallagher (2014) have explained that a core component of the funding provided by China was the use of a primary commodity as collateral. In the Bui case this entailed the sale of 30,000 tons of cocoa per year, with the proceeds paid into an escrow account to serve as collateral.

The arrangement also included adding 85% of the revenues from the sale of electricity to the escrow account (Bräutigam & Gallagher, 2014). The accumulated funds were to be used to defray the loans, with the excess returned to the BPA at the prevailing interest rate. What was different about the Bui project financing was the use of a combination of an ‘off-take’ and an ‘unrelated source of income’ in the form of a resource-backed package. The grace and amortisation periods of five and 20 years, respectively were also shorter than the six and 25–30 years for the Akosombo Dam. The interest rates were also generally higher for the Bui Dam financing than for the Akosombo Dam. This is contrary to Bräutigam and Gallagher’s (2014) finding that China’s African financing tends to have lower nominal rates and longer repayment periods.

A key informant from the BPA (R2 11 July 2019) explained that the financing arrangement was structured to accommodate the fact that most developing countries like Ghana lack the capital to undertake such large-scale projects but do possess primary commodities that can

act as collateral. During the construction period, the Exim Bank was disbursing part of the loan and the grace period was only for the repayment of the principal. The interest component of the buyer's credit needed to be serviced. Since there was no cash flow coming from the sale of power during the construction phase, the government needed to find a way to service the interest payment. It is this situation that pushed the government to look at other innovative ways of servicing the loan. It therefore entered into an agreement between the Ghana Cocoa Board (COCOBOD) and a Chinese company on a purely buyer–seller basis to use cocoa as collateral for the loan. The proceeds from the sale of cocoa were deposited into a special account that was used by the China Exim Bank to service the interest payment of the buyer's credit. Furthermore, the deal had been structured such that it was proceeds from the sale of electricity that would service the loan amortisation, which was a fixed amount; the sale of cocoa was meant to be a buffer stock to cover any shortfall that might arise from the proceeds from electricity. According to another key informant from BPA (R3, 11 July 2019):

> This deal structure ensured that the power purchase agreement between BPA and ECG was a commercial deal, since the proceeds are meant to service the loan repayment to China Exim Bank.

China, on the other hand, has the market and demand to utilise primary products. The informant explained that Ghana had moved away from traditional funding from international financial institutions like the World Bank because of the conditionalities attached to accessing funds for projects with social and environmental consequences (R2, July 2019; R3, July 2019). The informants added that the concessional loan was currently being repaid by the government and is part of its fiscal profile. However, the government had determined that the concessional portion that it is financing from the fiscal profile would be transferred to the BPA (through a lending agreement that was ratified by parliament), when BPA completes the payment of the buyer's credit facility, allowing the government to recoup the concessional part of the loan. In effect, the entire loan (concessional loan and buyer's credit facility) will be repaid by Bui (R3, July 2019).

3.2 Financing of further hydro-energy projects in Ghana (2005–25)

In 2004, Ghana published its National Strategic Energy Plan, which covered the period 2005–25. In this report four hydropower dams were planned for this period (see Table 4). In November 2009, Ghana and Brazil signed a memorandum of understanding to construct the Juale Dam, with Brazil agreeing to provide $250 million of the total $300 million project cost. In addition, two Brazilian contractors (Constructura Noberto Odebrecht and Andrade Gutierrez) were expected to provide support for the project. However, the Ghanaian government abandoned the Juale Dam project and instead used the money received from Brazil to construct the Eastern Corridor road (Allotey, 2018).

Key informants from ISODEC, ACEP and the Ministry of Energy (MoE) all agreed that big hydro sources have been exhausted and there are only medium and smaller potential hydro sources around the country (R1, July 2019; R5, July 2019; R4, July 2019). They also noted that the financing of hydro projects has mainly been led by the government, because hydro projects are national, publicly owned projects and involve huge capital outlay. It was intimated by the informants that, given the huge capital outlay required to finance the

construction of a dam, and the absence of any further large-scale dam site in Ghana, the financing of medium and small-scale dams will mainly come through government-led intervention. They noted that henceforth, in order to make these projects viable, undertaking them will be based on a combination of energy and agricultural production needs. In this respect, several such potential dams have been identified (Table 4), including those at the Pwalugu, Juale, Daboya, Hemang and Kulpawn sites.

Table 4: Potential dams

Dam	Hydro capacity (MW)	Solar capacity (MW)	Funding sources
Juale	87	N/A	N/A
Pwalugu	60	40	Government of Ghana
Daboya	43	N/A	N/A
Hemang	93	N/A	N/A
Kulpawn	36	N/A	N/A

Source: Field work (2019).

Interviews with Ghanaian civil society actors (R1, July 2019) reiterated that the construction of medium and small-scale dams is contingent upon the availability of funds. These dams are unlikely to attract private-sector investment because of the huge capital outlay required and long repayment period (R1, July 2019). Consequently, such investments can only be undertaken by sovereign governments because of the economic impact the investments will have on their economies. A feasibility study on Juale has been carried out by the VRA; the site is supposed to be jointly developed between Ghana and Togo because the flooding of the dam will inundate areas in Togo (R4, July 2019).

Out of the potential dams listed, the only one currently under construction is the Pwalugu. This particular dam has undergone several changes in discussion and designs that have come with varying costs. At some point the cost was estimated at close to $1 billion, prompting the World Bank to urge the Savannah Accelerated Development Authority (SADA) to revise the multipurpose dam project (Awuni, 2017). Current cost estimates vary between $700 million and $800 million, with the Cabinet of the Government of Ghana approving $700 million for its construction. Relatedly, Wedam (2019) has reported, per the words of the Upper East Regional Minister, that the government is taking steps to complete the Pwalugu Multi-purpose Dam Project by focusing on the power component, which is estimated to cost $300 million, while studies continue on the other components, including irrigation and flood control.

Financing of Pwalugu Dam

The Pwalugu Dam is intended to be a multipurpose dam that provides for domestic energy (60 MW) and irrigation needs, and also contributes towards the control of floods that periodically occur when there is spill-over from the Bagre Dam in Burkina Faso. According

to a government informant (R4, January 2020), the flooded area has the potential to accommodate 120,000 fish cages of 25 square metres each, with an average yield of two tons per cage. It may also provide irrigation to service over 24,000 hectares of land, with the potential to increase annual rice production in Ghana by 117,000 metric tonnes, reducing rice importation by 16% (Myjoyonline.com, 2019b). The MoE is responsible for the energy component, while the Ministry of Agriculture has responsibility for the irrigation component. The total cost of the project is $894.5 million, comprising $366 million for the hydro component, $55.38 million for the solar component and $473.2 million for the irrigation component (R4, January 2020). R4 explained that the entire project will be funded by the Ghanaian government over a five-year period, with annual allocations in the national budget. According to the Ghana Irrigation Development Authority of the Ministry of Food and Agriculture (2020), funding of the integrated dam project is coming from the sale of the government's Eurobonds on the Eurobond market. The project will be implemented through an EPC contract with Sinohydro/Power China International.

There was no tendering for the project. However, a key informant from the MoE (R4, January 2020) said that, "even though the contract was awarded through sole sourcing, all the necessary procurement procedures for sole sourcing were followed". As part of the process of managing the sole-sourcing contract procurement and construction process, the Pwalugu Development Committee was set up. Membership of the committee comprises the Office of the Vice President, the Ministries of Finance, Energy and Agriculture, and the Attorney General's Department.

3.3 'Ghana beyond aid' and going back in the red

The financing of the Pwalugu project under the Akufo-Addo presidency and NPP electoral victory in 2016 is set against a wider backdrop of government spending and borrowing patterns which have expanded over the past decade.

Ghana issued its first Eurobond on international capital markets in 2007, before the international financial crisis, when it had been riding a previous wave of growth over five years from 2002 to 2006, averaging nearly 5.5% growth annually (Haque et al, 2017). High growth levels and expectations about gas and oil revenues attracted investors to Ghana; however, they also fuelled parallel government spending, which outpaced petroleum revenues. For example, the Petroleum Revenue Management Act (2011) required nearly a third of oil revenues be placed into two sovereign wealth funds, a Heritage Fund and a Stabilisation fund. The sovereign wealth funds accrued interest of roughly 2%, while Ghana's Eurobond interest payments were a striking 8%–9% between 2007 and 2016. Between its first and second Eurobond, Ghana revised its GDP series in 2010, rebasing and reclassifying itself under the OECD-DAC categorisations into the lower-middle income category. The rebasing meant Ghana gradually lost access to concessional financing for loans at an average rate of 1.6% and a maturity of 28.7 years (Hambayi, 2016), while it also boosted its credentials as a site for investment. This led to Ghana's swift shift from using multilateral concessional financing to taking outsized commercial offshore lending from international capital markets, as well as scaled-up bilateral infrastructure borrowing, particularly from China (see Appendix 1).

High and twin deficits from bilateral lending from China, and commercial Eurobonds from the Paris Club countries, resulted in a dramatic debt-to-GDP ratio increase from 31% in 2007 to 72% by 2015. Ghana had subsequently entered into an IMF bailout by the end of 2015 with austerity measures imposed by the IMF Extended Credit Facility (ECF) stretching into 2018. Following their electoral win in 2016, under the political and policy banner of 'Ghana beyond aid,' the Akufo-Addo administration rearranged power sector debts owed to utilities into a special purpose vehicle – the Energy Sector Levy Act (ESLA) to be sold as a bond. However, demand from external buyers fell short (Reuters, 2017). President Akufo-Addo and the NPP continued the pattern of previous administrations in pursuing high and twin forms of borrowing in the form of Chinese resource-collateralised loans, as well as seeking larger sums of lending from international capital markets in the form of long-term Eurobonds to the tune of over $8 billion (Table 5). The NPP has delivered on a 'Ghana beyond aid' by relying on external commercial debt in the form of Eurobonds and Chinese bilateral policy lending. In 2018, it entered into a $2 billion Master Project Support Agreement (MPSA) with China's state-owned hydropower and construction firm Sinohydro in a bauxite-collateralised arrangement which grants the firm access to 5% of Ghana's bauxite reserves in the Ashanti region. The bauxite arrangement is part of a broader $19 billion bilateral loan facility between Ghana and China. The groundbreaking ceremony for the Pwalugu dam in November 2019 and the fast-track parliamentary approval of the project in February 2020 followed swiftly after the bauxite deal was solidified. Soon thereafter, the economic effects of the impending global Covid-19 pandemic began to be felt in a country already at high risk of debt distress before the global downturn.

By the time the first case of Covid-19 was confirmed in Ghana on 12 March 2020, the country was already being strongly affected by decreases in China's demand for commodities at the start of that year, as well as by a hard-hitting decline in global oil prices, and volatile markets for gold and cocoa. Severe weather and logistical issues also affected cocoa exports at the start of the pandemic, with all three commodities and the effects of the pandemic dampening expected government revenues. By April 2020, Ghana had once again entered into another ECF with the IMF for $1 billion; the full extent of its quota as its external debt exceeded 70% (IMF, 2020).

Table 5: Ghana Eurobond Issuances

Bonds	Amount (US$m)	Coupon	Maturity
2007	750	8.5%	2017
2013	1,000	7.88%	2023
2014	1,000	8.13%	2026
2015	1,000	10.75%	2030
2016	750	9.25%	2022
2017	2,200		
2018	1,000	7.625%	2029
2018	1,000	8.627%	2049
2019	1,000	8.95%	2050
2019	750	7.87%	2027
2019	1,250	8.125%	2031
2020	1,250	6.375%	2026
2020	1,000	7.875%	2034
2020	750	8.75%	2061

Source: Ministry of Finance (2019; 2020); London Stock Exchange.

4 Conclusion

This paper has looked at the external financing context for dam building in Ghana over time. While the early Akosombo dam benefited from concessional lending, contemporary dams such as the Bui and Pwalugu projects have relied on bilateral Chinese policy bank lending at non-concessional rates. Ghanaian–Chinese bilateral financing has also involved resource-collateralised deal making involving cocoa, in the case of Bui, and bauxite in the case of Pwalugu. Yet, unlike other resource-for-loans cases in Africa, these bilateral arrangements are happening against the background of engagement with international capital markets via Eurobonds. Ghana stands at the forefront of access to international capital markets in Africa and has the highest load of Eurobonds on the continent. Narratives of 'debt trap diplomacy' do not empirically bear out in the Ghanaian case, given the two-pronged approach the government under both the NPP and the NDC have taken in engaging Western capital markets and Chinese policy bank lending. The decline of the overall availability of concessional rates of lending for contemporary dam projects, and the ready availability of external private or policy bank lending for such projects, highlights Ghana's structural vulnerability and dependent position within the contemporary international financing landscape. It is able to borrow vast amounts of funds, but all options are on more expensive terms than during previous temporal periods of development finance.

We have found that the legacies of the post-independence 'developmental mandate' of the Nkrumah era, which have continued to persist in nationalist symbolism and through faith in large-scale 21st century infrastructure development, continues to drive executive decision making in contemporary Ghana, regardless of economic downturn or fiscal position. Section two of this paper discussed the gap in the existing literature on dam building in Ghana and redressed this by linking up with existing scholarship on political institutions and executive power. We hold that developmental mandates and the power of the executive explain the timing and likelihood of whether a dam project in Ghana reaches financial closure and enters the construction phase as much as does the availability of external financing, regardless of the identity of the donor (OECD, Paris Club, or outside bilateral donors). At every historical period in which a dam has been built in Ghana, there has been political determination in the face of, or in the aftermath of, economic crises and dismal fiscal balance sheets.

Our findings decentre donor/creditor-driven narratives of infrastructure development in Ghana and highlight the importance of meso-level political analysis to understand why and how 'host' country elites partake in financial arrangements with external creditors to achieve their own political ends and visions. The Ghanaian case deviates from other African cases, such as Angola, Zambia and Tanzania, in two key respects. First, political and electoral institutions shape not only party competition and patronage networks, but also developmental mandates that align with electoral strategies and timelines. Developmental ideologies and electoral survival drive spending concerns and financing deals, as reflected in chronic overestimation of government revenues and underestimation of budgets. Second, Ghana is unique relative to other African cases in its frontrunner engagement with international capital markets to achieve political and developmentalist ends, as well as in its engagement with Chinese bilateral lending. The historical and international context of receding aid and concessional lending, availability of bilateral and private financing for infrastructure, as well as fierce domestic electoral competition have increased Ghana's engagement with bond markets and policy banks in absolute terms. The NPP's campaign slogan of 'Ghana beyond aid' reflects an internalised neoliberal approach to development, one that does not believe it needs concessional or developmental assistance, but can rather rely on international investors and bilateral business allies. Ghana's contemporary two-pronged approach to external financing poses serious economic and environmental risks to its balance sheets, waterways and forests. Yet the difference between Ghana and other African cases lies in the contemporary Ghanaian regime's ability to make different decisions about infrastructure development and financing – there is already existing built technology, and various financing options which distinguish the present from the past. That political leaders and executives continue to push for infrastructure-led visions of development in Ghana – despite economic downturns, despite IMF bailouts – reaffirms the centrality of domestic elite political actors as key historical agents of dam development in Ghana.

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Appendix I

Table A1: Ghana's external debt by creditor

	As at 31 December					As at 30 September
	2014	2015	2016	2017	2018	2019[1]
			(*US$ millions*)			
Long-Term External Debt Total	**13,871.8**	**15,781.8**	**16,460.9**	**17,174.1**	**17,868.5**	**20,149.9**
Short-Term External Debt Total	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	n/a
External Debt Total	**13,871.8**	**15,781.8**	**16,460.9**	**17,174.1**	**17,868.5**	**20,149.9**
Multilateral creditors	**4,900.7**	**5,379.4**	**5,547.9**	**6,436.8**	**6,390.5**	**6,433.4**
Of which:						
IDA	2,941.4	3,279.3	3,435.4	3,921.7	3,880.3	3,909.4
IBRD	-	-	-	-	-	-
IMF	605.1	753.0	726.4	958.3	1,015.0	1,098.5
African Development Bank Group	994.7	967.1	1,032.9	1,200.0	1,129.4	1,088.6
IFAD	125.2	152.0	137.4	144.0	146.2	141.9
Others	234.1	227.8	215.6	212.9	219.5	195.0
Official Bilateral	**1,127.8**	**1,096.3**	**1,136.4**	**1,210.7**	**1,204.8**	**1,212.9**
Of which:						
Paris Club	**685.0**	**668.0**	**663.5**	**746.3**	**754.1**	**761.6**
Austria	29.6	26.6	31.0	46.6	88.0	98.9
Belgium	14.5	13.1	12.5	13.7	13.0	11.7
France	299.3	333.2	314.6	358.9	337.7	327.7
Germany	227.0	202.9	218.8	246.0	236.9	254.9
Italy	24.2	21.8	20.9	23.8	22.8	21.8
Spain	68.4	48.6	43.8	34.4	30.2	24.6
Denmark	21.5	21.6	21.8	22.8	25.5	22.1
Non-Paris Club	**442.8**	**428.2**	**472.9**	**464.3**	**450.7**	**451.3**
China	370.9	345.0	285.9	290.9	267.4	244.5
Kuwait	22.7	18.7	42.2	42.3	90.6	118.5
Korea PR	30.3	25.0	97.4	76.1	38.8	37.2
Saudi Arabia	8.5	7.7	18.7	20.0	18.9	17.3
India	10.2	31.5	28.4	35.0	35.0	33.9
Export/Suppliers/Buyers Credits	**1,158.4**	**1,176.2**	**1,315.2**	**1,461.2**	**1,235.6**	**1,089.1**
Belgium	337.2	304.9	513.5	752.1	663.4	568.0
Canada	254.0	252.4	225.7	198.5	169.8	156.5
France	6.9	13.4	43.4	46.3	42.1	27.3
Finland	9.4	8.9	6.8	6.4	5.2	4.6
Israel	277.6	357.6	345.1	292.5	244.9	228.2
Netherlands	215.1	192.4	146.0	139.4	95.3	94.1
United States of America	57.8	46.3	34.4	26.0	14.8	10.4
Commercial	**4,801.3**	**6,318.5**	**6,731.2**	**6,296.0**	**7,343.5**	**9,761.7**
ABSA Bank	0.4	1.7	1.3	0.6	-	-
Citibank	88.6	97.9	97.9	93.1	83.5	78.7
Credit Agricole	48.9	37.1	33.1	34.1	17.9	13.9
Deutsche Bank Sociedad Anonima Es	57.9	49.5	35.6	32.5	28.5	16.1
Export-Import Bank of China	505.7	488.4	476.7	489.8	398.4	364.5
Export-Import Bank of USA	271.2	326.5	353.7	321.0	299.2	266.3
International Capital Markets	2,530.5	3,530.5	3,949.0	3,680.1	4,978.1	7,694.7
NEDBANK	0.6	1.1	0.4	-	-	-
Societe Generale	16.8	13.1	9.3	5.6	1.8	10.2
Belfius Bank NV/SA	10.5	6.7	4.3	4.2	2.5	0.2
CDB	657.8	728.9	618.6	503.5	387.2	302.7
Others	611.8	1,036.6	1,150.8	1,131.5	1,146.4	1,014.4
Other Concessional	**1,883.5**	**1,811.3**	**1,730.1**	**1,769.3**	**1,694.2**	**1,652.7**
Austria	102.3	93.6	87.6	91.1	81.5	70.2
Belgium	52.0	45.3	34.3	28.1	24.6	15.2
China	721.1	755.0	827.0	775.7	726.2	691.3
Egypt	536.7	476.2	359.0	348.6	351.9	326.9
India	94.6	90.3	85.4	159.3	206.8	268.7
Netherlands	145.3	127.6	112.2	158.6	120.5	105.2
United Kingdom	-	-	-	-	-	-
United States of America	231.3	223.0	224.5	207.8	182.8	175.2

Source: Reproduced from London Stock Exchange, Global Medium Term Note Programme (p. 187).