Progress towards sustainable urban water management in Ghana

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Abstract

Purpose
In recent decades, governments in developing countries have experienced relentless pressure from key supranational finance providers (particularly the World Bank) to focus on the achievement of financial efficiency. This pressure persists despite evidence that basic institutions necessary for sustainable infrastructure and competitive commercial arrangements are often not present. This paper examines the steering of urban water management in Ghana as it progressed through a first failed public-private partnership in this sector (from 2005 to 2011), and beyond to 2017. Throughout this 12-year period, we consider progress, and barriers to the achievement of steering for sustainable development.

Methodology
Publicly available documentation is examined through the lens of steering for sustainable development (Voß et al., 2007), to consider the challenges of urban water management between 2005 and 2017.

Findings
Progress towards a more sustainable approach to urban water management was achieved through greater democratic governance, public accountability, and public engagement. This acted as a counter foil to power, and effected improvements of knowledge, and clarity of related goals. Effective sustainable management continued to be challenged however, by on-going World Bank pressure to focus on financial efficiency.

Practical implications
The provision of a sustainable water supply continues to be a significant challenge for many developing countries including Ghana. This study provides insights into how progress beyond crippling financial dependency might begin to be achieved.

Social Implications
Safe and sustainable water supply is critical for both the health, and economic progress of citizens in developing countries such as Ghana. This study provides insight into the value of drawing from a broad range of stakeholders in seeking viable pathways towards those goals.

Value
While water management challenges for developing countries have been significantly researched, particularly in the context of private financing arrangements, little empirical insight is provided into how governments can move forward with sustainable progress beyond the failure of such arrangements. Water management in Ghana beyond 2011 provides that unique context.

Key words: water management, steering, sustainable development

Article classification: Case Study
Introduction

The 2015 UN ‘2030 Agenda for Sustainable Development Goals’ provides a vision of a world where safe drinking water, sanitation, and affordable, sustainable energy become basic human rights for everyone. However, these ideals remain elusive for many developing countries. In 2015, water scarcity affected 40% of the global population, 2.4 billion people did not have access to basic sanitation, and an average of approximately 1,000 children died every day from preventable water and sanitation-related diarrhoeal diseases (UN, 2015). Sub-Saharan Africa accounts for approximately half of the global population that does not have access to safe water. Correspondingly, approximately half of the world’s water related child deaths also occur in that region (UNICEF, 2015).

A key challenge for governments in all developing countries, as they seek to provide basic utilities such as water, is how to finance the investments required. Generally, they are required to interact and work within the dominating control and power of supranational funding providers such as the World Bank (Pessoa, 2008). During the 1990s and early 2000s, debts to the World Bank steadily increased for many developing countries, as they sought to address acute infrastructure deficiencies. This dependency often leads to pressures to concentrate on financial efficiency rather than societal needs for the provision of sustainable utility supply. In Ghana for example, despite significant increases in funding for water related developments in recent years (JDC, 2016), 40% of urban populations still did not have access to safe drinking water by 2016 (MFEP, 2017).

While a range of studies have explored issues of urban water management, many focus on the context of private financing. The peculiar challenges for effective water management within developing countries remains poorly understood (Anand, 2017; Schmidt, 2017). In Ghana for example, a range of studies have explored urban water management during the period of a first public-private partnership (PPP) contract within that sector (2005 to 2011) (Forrer et al., 2010; Amenga-Etego and Grusky, 2005). Zaato (2015) examined the circumstances of that contract’s termination, noting the private partners failed to meet almost every target. Several studies focus on factors contributing to the termination of that contract (Atarah, 2015; Hirvi and Whitfield, 2015; Rahaman et al., 2007; 2013; Suleiman and Khakee, 2017; and Zaato, 2015). However, the literature stops at this point, providing no empirical insight into how urban water management in Ghana was able to recover and progress beyond that failure. Here we respond, by exploring the progress of urban water management in Ghana beyond 2011. In so doing, we address a gap of interest to many other less developed economies, as they also struggle to progress beyond similar failed PPP arrangements within their water sectors.

We draw on Voß et al.,’s (2007) unique concepts of steering for sustainable development, to first re-examine urban water management in Ghana up to the termination of that failed PPP (2011), and then to consider progress beyond to 2017. Voß et al., (2007) suggest that three key factors challenge sustainable development; governments are commonly ambivalent about goals, knowledge of sustainability is often uncertain, and the power reflected in related responses is often widely distributed. These concepts have particular utility in the context of water management within developing countries, where so many continue to struggle with the goal of achieving safe potable water for all. Water management challenges are further complicated for all nations today, with concerns of global climate change, and more recent ambitions to achieve Sustainable Development Goals (SDGs), including clean water and sanitation1. Voß et al.,’s (2007) steering for sustainable development framework enables effective navigation of these complexities.
Insights from this study suggest that both the government’s water goals, and related knowledge in Ghana improved towards 2017. However, power remained dispersed, both vertically and horizontally, with concentration among a growing range of large supranational steering entities. Urban water management in Ghana from 2011 to 2017 continued to be hampered by a myopic focus on financial efficiency. Our findings suggest that there is a critical need for both the Government of Ghana and supranational organisations like the World Bank to re-focus energy on engaging with effective transparency and network governance. Our argument is that progress can be achieved by directing more attention to public concerns for the provision of sustainable and safe water supply.

The remainder of the paper is structured as follows. The next section develops a theoretical framework focused on steering for sustainable development. That is followed by a discussion of the research approach which focuses on documentary analysis. A literature review is then developed, focused on existing insights into urban water management in Ghana to 2011. Sections follow which then present new insights into urban water management in Ghana from 2011 to 2017. A final section presents further discussion and conclusions.

**Steering for sustainable development**

This study draws on the theoretical framing of steering for sustainable development (Voß et al., 2007), to help make sense of the materials examined. Through its systematic unpacking of the complexity of ‘sustainability’, concepts from this framework avail meaningful insight into why governments fail to provide safe and universal water supplies. Voß et al., (2007) start by arguing that sustainable development (of which water management is an element) entails an “interaction between society, technology and nature”, an “integration or balancing of potentially conflicting values” … and “the interplay of diverse factors … [that are] not under the power of any one single actor” (Voß et al., 2007, p. 194). Those diverse factors include politics, law, science and lifestyles. In effect, sustainable development depends of effective governance.

Voß et al., (2007) emphasise the complexities for governments seeking to steer resource consumption for sustainable development. Steering is defined as a “purposive attempt to bring a system from one state to another by exerting influence on its dynamics of development” (Voß et al., 2007, p. 195). In this understanding, attention is directed to the relationship between intentions and outcomes. This conception enables broad consideration of the role and impact of all participants within a given context. Consideration needs to be directed therefore, to the roles played by national governments, organisations, civil society, differing sectors of the public, and in the case of developing countries, supranational bodies such as the World Bank. Arguments developed by Voß et al., (2007), are useful as they provide insight into three key problems associated with sustainable development, and suggest five approaches that governments may take, as they attempt to manage related challenges.

*Problems associated with steering for sustainable development*

This subsection examines the problems and challenges that Voß et al., (2007) identify, as governments seek to achieve sustainable development. Problems associated with steering, particularly in the context of sustainable development, can be related to the goals or the direction of steering, *knowledge* of systems (which impacts on the ability to assess the effects of action), and *power*. 
Firstly, rational thinking would suggest that effective steering requires the establishment of clear goals. However, particularly with respect to sustainable development, goals are often ambivalent, mixed or even contradictory (Voß et al., 2007). Ambivalence occurs because sustainability involves trade-offs between a range of objectives, and there is often no common measure for comparing goals. While different stakeholders may argue for the legitimacy of a diversity of goals, they will seldom be simultaneously achievable. As an example, the need for sustainable energy may be accepted as a legitimate societal goal. But, there may be conflict between politicians, agencies and interest groups about whether this goal requires a focus on nuclear energy or renewable sources. Voß et al., (2007) also suggest that even where a consensus on goals is achieved, there may be secondary problems such as consensus on the right targets or measures. To achieve consensus or a compromised solution, goals often need to be described in vague terms.

The second sustainability steering problem Voß et al., (2007) identify is knowledge. Sustainable development is complex and depends on interactions between science, technology, ecology, environment, and human behaviour. There may be little certainty about how different factors interact in any given situation. Yet to manage sustainable development effectively, a knowledge of complex dynamics and how they interlink is critical. “A special aspect of sustainable development problems is that they often comprise interactions between very different elements from the domains of society, technology and nature” (Voß et al., 2007, p. 197). All of these knowledge challenges are clearly apparent in the case of water. While water is important for all sectors of society, its supply depends on the vagaries of climate and geography. Water has significant health impacts, and potential for pollution from other human endeavours. Furthermore, related infrastructure has challenging long-term maintenance needs. In addition, whatever the response, related policies and practices will likely impact on a range of other emergent and uncertain dynamics; for example, climate change.

Finally, the power issue is one that recognises some reconfiguring, reorganising or establishment of power may be necessary to effectively address sustainability. Sustainability challenges may entail significant horizontal distribution of power, with input from actors from many different industries, professions, organisations and associations. This may have to coordinate with significant vertical power distribution, from a range of different domestic and supranational entities including funding bodies. This is particularly the case in the steering of water management in developing countries, which continue to be beholden to the requirements of key external financiers such as the World Bank. Fukofuka and Jacobs (2018) observe in the case of Tongan development projects however, that while the World Bank tends to dominate at the time contracts are signed, that relationship becomes more complex as those projects progress, with national and even village level actors able to forge an influence.

A range of studies provide broad insight into the challenges that the Government of Ghana may have experienced in recent decades with respect to goals, knowledge and power, as it seeks to steer urban water management for sustainability. While not directly utilising Voss et al., (2007), the three key challenges of steering for sustainable development, are generally accepted and evidenced. Anand (2017) and Brugnach and Ingram (2012), argue that a key challenge in the achievement of ‘sustainable’ water management, is the need to resolve the ambiguity that results from the many valid perspectives brought by the multitude of actor groups that are necessarily involved. Anand (2017) argues that progress towards a vision of public water might be achieved where an openness to that multitude of perspectives can be maintained. Abderrahman (2000) emphasises regulatory problems and legal and institutional arrangements as barriers to effective urban water management. A consensus in these arguments is that what
is important now, is to reject “unequal practices that favour one cultural understanding of water over others” (Schmidt, 2017, p 229). Bayliss (2014, p. 305) suggests that governments that have been maligned in the past, should therefore be re-empowered; “rather than promoting greater privatization, the social interest will be better served by strengthening state capacity”.

Schmidt (2017) explains how global water management philosophies have shifted in recent decades, from a focus on scarcity in the 1980s, to a more recent focus on the importance of security. ‘Scarcity’ emphasised human rights and the needs of the public for safe supply and sanitation, including and therefore demanding, a state-focused approach. ‘Security’ on the other hand, focused on claims of government mismanagement, and economic inefficiency. Globalised free-market rationality was championed as the solution. Several studies argue that the World Bank and other powerful financial institutions were instrumental in engineering this shift to ‘security’. Strategies that the Bank drew on in this endeavour included, consistently attributing blame for past water infrastructure failings to local governments (Bakker, 2013; Goldman, 2007), and imposing complex and irreconcilable funding conditions which segment societies, (Bakker, 2013; Goldman, 2007), effectively excluding many (poorer) citizens from both service, and effective public engagement (Bakker, 2013). In addition, the World Bank’s championing of powerful ‘self-referential’ transnational networks, contributes to the increasingly blinkered focus on strict financial conditionalities, to the detriment of visions for ‘public’ water (Bayliss, 2014; Goldman, 2007).

As a consequence of the shift to ‘security’, understandings of water management have transformed in recent decades from ‘public service’, to ‘commodity’ (Bayliss, 2014). This epistemological shift “has the subtle effect of replacing what might be public sector goals such as access, social justice, and equity, with financial ones, such as efficiency and profitability” (Bayliss, 2014, p. 295). Considered through the lens of steering for sustainable development (Voß et al., 2007), we may observe that powerful supranational steering organisations have been successful in recent decades, in cementing their position as the authority on water management knowledge, with the specific aim of reshaping related goals to support agendas of importance to them. In this study we will draw on the insights highlighted here, as we seek to make sense of how the Government of Ghana was able to progress with a water management agenda despite and beyond, the failure of a first PPP arrangement in that sector.

Five approaches to steering for sustainable development

This subsection examines the five approaches that Voß et al., (2007) suggest governments can draw on, as they attempt to manage the challenges of steering for sustainable development. The first approach is regulation and the crafting of rules. Regulation can take either a command or control approach, or an approach that aims at incentivising participants. Voß et al., (2007) suggest however, that regulation is not effective in addressing any of the specific problems associated with ambivalent goals, knowledge or power issues. Rather, regulation is a mechanism that assumes outcomes are controllable.

A second steering strategy entails establishment of shared visions to guide action. Shared visions are helpful in addressing ambivalence of goals. The belief is that a guiding vision can enable other steering problems to be overcome. In some respects, this concept is akin to the ideas of Broadbent and Laughlin (2013), where societal steering media, such as government departments, attempt to steer through shared societal lifeworld values. Societal goals are theorised to derive from background lifeworld values, which are socially agreed through communicative action (i.e. debates). Institutions and organisations including government,
professional and financial institutions, become the steering media developed to facilitate these societal goals through laws and funding mechanisms.

Third, steering can be achieved through learning, which might occur either through the acquisition of incremental knowledge as participants are encouraged to share knowledge, or as adaptive management. Learning strategies might be particularly useful in addressing complex and uncertain elements of sustainable development.

Fourth, Voß et al., (2007) suggest network governance. Approaches to network governance acknowledge that “there may be insurmountable differences in values, world views and interests, but that it is still necessary and possible to achieve agreement” (Voß et al., 2007, p. 203). Agreement might be achieved through either debating or bargaining. Van de Meene et al., (2011) drew on Voß et al., (2007), to argue that network governance was particularly important in the context of water, as related solutions need to be viewed holistically.

Finally, Voß et al., (2007)’s fifth approach is reflexive governance. Like network governance, reflexive governance also seeks to address the possibility that steering might become dominated by powerful actor groups (Voß and Bornemann, 2011). Reflexive governance differs however, as it requires acknowledgement that actors are interdependent, uncertain, and embedded within context. The emphasis of reflexivity is therefore on mutual probing and adaptation. Reflexive governance necessarily calls for democratically legitimate societal learning processes (Voß et al., 2009; Voß and Bornemann, 2011).

In conclusion, Voß et al., (2007, p. 208) suggest that a complexity of actors and goals can be “an asset to deal with sustainability problems because they can increase the variety of potential solutions”. Through combinations of these five solutions, a harnessing of the knowledge and perspectives of various actors, along with various elements of a system’s dynamics, becomes critical. An overview of the steering for sustainable development arguments presented in this section is represented visually in Figure 1.

Methodology and method

Our study employs “middle-range thinking” (Agyemang and Broadbent, 2015; Broadbent and Laughlin, 2013; Laughlin, 1995; 2004), drawing on a skeletal framing of appropriate theoretical concepts, which is then embellished though the ‘flesh’ of empirical findings. The steering for sustainable development framework developed by Voß et al., (2007), avails the appropriate skeletal framing here, because it provides practical and workable (Llewelyn, 2003) concepts, which enable the complex urban water challenges experienced in Ghana in recent decades, to be broken down and analysed into key constituent elements. Our period of interest commences in 2005 (when a first PPP began in that sector). We continue through the subsequent fall-out following the termination of that PPP (2011), to 2017. Beyond 2011, some retraction and reflection on the limitations of PPPs became apparent. 2017 was then chosen as an appropriate place to end our exploration (for now), because at that time, a surprising return to eulogising the importance of PPPs re-emerged, as a significant number of new PPP water projects were suddenly announced.
We divide the empirics of this paper into two sections. The section that follows, considers the steering of water management from 2005, to the point at which that first PPP failed and was terminated (2011). As we have noted, a number of prior studies have explored the circumstances and failings of that arrangement. The ensuing section of our paper is therefore fundamentally a literature review. Nonetheless, that review contributes to our conclusions, by reinterpreting available insights through the lens of Voß et al., (2007).

A further empirical section follows, which continues by exploring the steering of urban water management in Ghana from 2011 to 2017. The data utilised in that second phase of our study, is drawn from available web-based documentation and commentary. A documentary approach was pursued for its potential to provide insight into the ambivalence of expressed goals, the willingness of key agencies and actors to express related knowledge, and the impacts of power in the management of urban water (Voß et al., 2007). The websites of all key steering agents are explored including a range of government departments and agencies, Aqua Vitens Rand Limited (the former private partners to the first water contract in this sector), and the World Bank. Relevant downloadable documents, as well as information provided within those websites are reviewed. While all of the sources drawn on here are fully referenced in the bibliography, we also provide a summary of the data drawn on in Appendix A.

To achieve thorough coverage, we started at the Government of Ghana’s homepage (http://ghan.gov.gh/), to obtain an overview of all departments and agencies having water related responsibilities. The websites of relevant departments and agencies were then thoroughly explored and examined by the lead author for water related content. This was then reviewed by the co-author. Within the websites of other entities including Aqua Vitens Rand Limited, and the World Bank, searching focused on the words ‘water’ and ‘Ghana’. This review was undertaken at two points in time; October 2015, and again at October 2017. October 2015 was initially chosen as a point sufficiently beyond 2011 when the first PPP water contract in Ghana was cancelled. Public transparency was however, found to be limited at that point. A two-year period was therefore allowed to transpire before a further identical documentary review was undertaken in October 2017. Lodhia (2018) suggests that snapshot exploration of web-based disclosures can avail valuable insight into organisational change and communication.

Jeacle (2008, p. 1303) suggests value in researching web-based discourse, for its potential to provide “a general review ... to somehow capture the flavour or essence of how these organisations attempt to construct” a desired message. Websites provide a ‘virtual stage’ where organisations test legitimacy (Mescher et al., 2010). Gallhoffer et al (2006, p. 682) suggest that the web enhances the public sphere and democratic functioning, and provides potential for counter-accounts. Our approach therefore facilitates a reasonable insight into urban management challenges in Ghana. Text might suggest efforts to draw connections where there are none, or to silence inconvenient truths (Gabriel, 2004). Simplistic grand narratives may provide clues into how organisations seek to marginalise some, and benefit a powerful few (Boje, 1995). These arguments lead us to question whether related goals for water management were certain or ambivalent, how the depth of underlying knowledge was evolving, and how relationships of power were developing. Our assessments are however, necessarily subjective. This is therefore, a limitation of the study. Nonetheless, both authors contributed to reviewing all documents.

Other limitations of our methodological approach need to be acknowledged. An exploration of discourse provided through websites is only able to reveal the carefully tailored messages that
related agents are willing to provide. Critically, our insights will depend on the willingness of those agents to be transparent about water management goals, knowledge and power. We have addressed these concerns by ensuring that both authors contributed to the process of searching for and analysing relevant documents. In so doing, efforts were made to contrast and compare key arguments, to achieve a “plausible” and “trustworthy” analysis (Ahrens and Chapman, 2006, p. 834).

**Urban water management in Ghana to 2011**

Several studies provide insight into urban water management in Ghana up to 2011 when a first PPP in this sector was terminated. This section overviews that literature, adding new insights by explaining how failings to 2011 reflected all three of the steering for sustainable development problems identified by Voß et al., (2007).

The Ghana Water and Sewerage Corporation (GWSC) was established in 1965 with responsibility for managing national water supply, sanitation, and setting water tariffs. In 1999 GWSC was dissected into two entities; Ghana Water Company Limited (GWCL) to manage approximately 70 urban water supply systems, and Community Water and Sanitation Agency to co-ordinate rural water and sanitation. GWCL continued to 2017, to be responsible for urban water supply. In 2005, the Ministry of Water Resources, Works and Housing (MWRWH) was established with authority over these two agencies, to assume responsibility for “the formulation, implementation and co-ordination of policies and programmes for the systematic development of the country’s infrastructure requirements”2.

Into the “early 1980s, the operational efficiency of GWSC had declined to very low levels, mainly as a result of deteriorating pipe connections and pumping systems”3. Multiple institutional and operational challenges including significant non-revenue water4, poor debt collection, failure to bill or incorrect billing, poor maintenance, drought, and population growth, contributed to the difficulty of managing urban water supply (Wolf et al., 2007). Nepotism in the appointment of board members, corruption, and theft by bill collectors, added to this environment of poor control and accountability (Fuest and Haffner, 2007). Proposals to increase tariffs remained publicly unpalatable. As a consequence, as reported by the Jubilee Debt Campaign (JDC), deficits persisted and national debts escalated (JDC, 2016). Into the 1990s, the World Bank wielded its power to increasingly represent the complex water management challenges identified here as simplistic stories of inefficiency. Privatisation was the solution which the World Bank increasingly encouraged governments to pursue (Yeboah, 2006; Zaato, 2015).

After years of procrastination, and with no ex-ante consultation (Forrer et al., 2010), a ‘soft’ privatisation solution involving a five-year contract to manage the urban water sector was pushed through in 2005, between GWCL and Aqua Vitens Rand Limited (AVRL) (Amenga-Etego and Grusky, 2005). Yeboah (2006, p. 52) notes that “the reward for Ghana, following the conditionalities imposed by International Financial Institutions (IFIs) has been the availability of loans to help reschedule debts and to pay for the same infrastructure”. Outcomes through the five years following the signing of that contract were poor; non-revenue water did not decrease, and the supposed expertise of the private consortium was difficult to identify. “After pressure from workers and civil society organisations, complaining of the poor performance of AVRL”, the contract was “acrimoniously” (Atarah 2015, p. 14) terminated in July 2011. Since 2011, the government has reassumed management of GWCL.
Viewed through the lens of (Voß et al., 2007), all three key steering for sustainable development problems are suggested here. The failing of this privatisation with AVRL was accompanied by an increased ambivalence of goals, uncertainty of knowledge, and distribution of power. The World Bank’s imposition of “almost uniform [financial accounting] conditionalities” (Rahaman et al., 2007, p. 650), focused on profitability and efficiency (Bayliss, 2014), succeeded in marginalising poorer segments within society (Bakker, 2013), and so was inconsistent with core social goals for public access. Ideally, effective societal steering will include a strong focus on citizen participation and debate (Bovens, 2005; Haque and Mudacumura, 2007), to draw out a clear understanding of societal lifeworld values. While Ghanaian society was quite vociferous in its protests against PPPs both up to, during, and beyond the AVRL contract, their voices were largely “ignored and subsumed by those of the state and its decision makers” (Yeboah, 2006, p. 52). As a consequence, a range of societal concerns for water were not effectively built into the AVRL contract, including water access for all, and improved life expectancy.

The weak due diligence (Itika, 2011), poor planning, and poor contract negotiation (Zaato, 2015) apparent in this AVRL case, confirms that knowledge within the Government of Ghana had also become more uncertain through this privatisation experience. In addition, we can observe that power also became both more concentrated, and more distributed (Forrer et al., 2010; Voß et al., 2007). In embracing privatisation, the government had now bowed to the demands of their most powerful creditor, the World Bank. However, presenting some contrast to Bakker (2013), the World Bank’s success in achieving its aims in this case was limited. In Ghana, the government also felt compelled to respond to increasing demands from community groups. The outcome was a contract that only outsourced the management of water, but not control of related infrastructure (Amenga-Etego and Grusky, 2005). Here we add to observations of undemocratic contract negotiation (Wolf et al., 2007; Zaato, 2015), by observing that efforts to placate the demands of these two distinct stakeholder groups (financiers and community), effected a contract that was flawed in almost every respect, preventing any of the interested stakeholder groups from achieving effective steering at this time.

### Urban water management in Ghana - 2011 to 2017

This section progresses from the review presented in the preceding section, by exploring urban water management in Ghana from 2011 to 2017. In so doing, three subsections are separately developed which ask; how the goals of water management were articulated; what was the certainty of knowledge; and how was power distributed. The final discussion and conclusions section then questions how each of these factors impacted on the steering of urban water management towards sustainable solutions.

**How were goals articulated?**

Over the period 2011 to 2017, a range of, in some cases conflicting goals for water management were articulated. However, towards 2017 some progress was apparent in both the development of specific targets, and in an articulation of how those apparently conflicting goals reconciled. In short, the review undertaken here suggests that towards 2017, learnings from past management failings in the urban water sector in Ghana were beginning to lead to less ambivalent goals. Here it is argued that until 2011, the steering of water was dominated by the World Bank. Until 2011, the Government of Ghana remained unable or unwilling to give significant attention to community concerns regarding water. However, water related goals began to be clarified towards 2017, as the government demonstrated an increasing ability to
reject the World Bank’s myopic financial understanding of water management (Schmidt, 2017), and find some space to also engage with community.

Throughout the period of this study, the World Bank continued to emphasise goals of cost efficiency, profitability, privatisation, and full cost recovery (Amenga-Etego and Grusky, 2005). Any reference from financiers to societal goals of safe drinking water and poverty reduction, remained secondary. This prioritisation of efficiency is evident in the government’s 2007 National Water Policy. Water goals there included; “(i) to promote private sector participation in investment and management of water supply as a means of mobilizing investment and improving overall efficient and effective operation [and] (ii) to encourage community ownership and local private sector participation” (GoG, 2007, p. 32). Significant evidence from other African water privatisations emerging at this time suggested however, that while profitability and efficiency are important, those goals should be secondary, to a primary focus on safe potable water for all. Itika (2011) argues that the myopic focus on efficiency rarely achieves its aims; the need to maximise profits for the lowest cost, commonly results in a significant compromise of quality, safety and equity. Towards 2017, water goals as expressed by the World Bank became even more ambivalent. Elliott (2016, p. 3), argued that into the mid-2010s, the so-called ‘Washington Consensus’ focus of austerity, privatisation and financial liberalisation continued to dominate. The author concluded that “there’s nothing wrong with the rhetoric, but it’s the performance that counts”.

Rahaman et al., (2013) add that in forming water goals, it is important to establish clear, open and active dialogue with the public. Forrer et al., (2010) argue that a careful combination of both ex-ante and ex-post accountability is important. However, following termination of the AVRL contract in Ghana, the Jubilee Debt Campaign continued to observe that both the Government of Ghana and the World Bank, provided “little [public] transparency”, “preventing civil society, media and politicians from holding the government and the World Bank to account” (JDC, 2016 p. 5). This has not been for want of effort from vocal groups in Ghana. Rahaman et al., (2013) note the community in Ghana is increasingly sophisticated in demanding protection of basic human rights. This is evident in recent commentary from the community group ISODEC, who argued that in narrowly focusing on financial concerns in the steering of urban water management in Ghana, donors have come to dominate, which “could prove detrimental to the sector in view of the fact that the current global difficulties could lead to a drastic reduction of donor support in this sector” (ISODEC, 2013, p. 2).

Despite these challenges, some improved public accountability and reworking of water management goals became evident towards 2017. The Government of Ghana’s 2014 ‘Water Sector Strategic Development Plan (2012-2025)’ stated that “the vision of the water sector is ‘sustainable water and basic sanitation for all by 2025’” which means ensuring that “all people living in Ghana have access to adequate, safe, affordable and reliable water services, practice safe sanitation and hygiene and that water resources are sustainably managed” (MWRWH, 2014, p. 16). GWCL stated that to achieve this goal, investment in the region of $100 million per annum, or $2 billion in total would be required. Another shift into 2017, was belated commentary on the failings of the AVRL PPP contract. The Ghana Water Company (GWCL) had now compiled a brief but insightful ‘History of Water Supply in Ghana’. Recent privatisation experiences were directly addressed. The document strongly and bluntly explained, “at the end of the [AVRL] management contract period on 5th June 2011, all the performance indicators showed that private involvement in the operations of GWCL had failed to bring about the expected positive improvement”. Almost repeating verbatim the critique of Zaato (2015), the document acknowledged that performance in “almost all the systems” was
“poor”, including reduction in non-revenue water, treatment plant operations, and debt collection.

Into 2017, the Ministry of Sanitation and Water Resources, through the Ministry of Finance and Economic Planning, also clarified a more community-oriented understanding of water goals. Its ‘2017 Budget Estimates’ document disclosed significant detail of budgets, actuals, costs, and related strategies, and explained that the goal for water was, “to contribute to improvement of living standards of Ghanaians through increased access to and use of safe water, sanitation and hygiene practices and sustainable management of water resources” (MFEP 2017 p 5). The document went on to explain ‘key achievements’ for 2016 (largely low-cost including public awareness campaigns), and that total water capex was GH₵ 161 million in 2017 (approximately $US36 million as per the GWCL website), of which GH₵152 million was provided by donors.

Summarising through our lens of steering for sustainable development, the Government of Ghana appeared increasingly able towards 2017, to publicly reflect on learnings from past failings in the water sector. This public engagement was achieved despite the World Bank’s best efforts to keep the government focused on financial efficiency. Here we contrast to Bakker (2013), Goldman (2007), by observing that in this case, despite significant ‘noise’ from the World Bank about the importance of financial efficiency, the government was increasingly able to find space to engage less powerful others. Through that engagement, learnings about effective water solutions, and some untangling of ambiguous and conflicting social, economic and technological goals for water, was able to progress (Voß et al., 2007). Here it is argued that modest developments in public engagement, contributed to improved water knowledge, which in turn enabled development of less ambivalent goals. Further explanation of how community engagement was critical to that progress, is presented in the following subsection.

What was the certainty of knowledge?

While the failure of the first PPP contract within the urban water sector in Ghana in 2011 was disappointing, the experience contributed to a more nuanced understanding of how financial control might best be achieved. Shortly after the 2011 termination, the Ministry of Finance and Economic Planning released the ‘National Policy on Public Private Partnerships (PPP)’ which argued reflectively that privatisation had no more than “the potential to offer enhanced value for money … for the benefit of the people” (MFEP, 2011, p. 1). That document also acknowledged that risk allocation, the ability of end users to pay, accountability and competition, were also important factors to be achieved in any PPP arrangement. A more recent 2014 ‘Water Sector Strategic Development Plan (2012-2025)’ softened the tone on privatisation even further, presenting it as simply one of several possible financing solutions. “The water sector will require increased financial investment from government and other non-traditional sources … to ensure sustainable financing of the sector as traditional aid … begins to decline” (MWRWH, 2014, p. 26).

A former partner to AVRL, Vitens Evides, disclosed a candid reflection on its relationship with the Government of Ghana, in its 2011 Annual Report; “obviously, we went through our ups and downs with our partner and got to know each other better as we went along. … We’ve remained on good terms with GWCL and are currently working together on the basis of a three-year contract” (VEI, 2014, p. 11). While providing no detail of what they were ‘working’ on, this comment confirms that an economic relationship was on-going. No detail of this relationship was disclosed on any Government of Ghana website. The only information available on what Vitens Evides and GWCL were apparently now working on, came from a
Vitens Evides factsheet, suggesting smaller technical projects including, “improve competency and knowledge of officials, operators and laboratory officials” and “investing in equipment and improved availability of materials” (VEI, 2011, p. 1). These comments add to suggestions that the government was seeking broad engagement in its efforts to address past failings and develop knowledge.

Other perspectives on the financing of water were also expressed at this time through community groups. ISODEC (2013) argued for example, that Ghana was rich in resources, and so the financing of water infrastructure ought to focus on better tax collection, particularly from large multinationals. In a similar reflection, Amanthis (2012) argued that privatisation is unnecessary; “Ghanaians can finance their water sector themselves. Since 2010 the country has produced oil. It’s one of the world’s leading gold and cocoa producers. Taxation needs to be properly regulated”. Consistent with Anand (2017), these comments suggest that the citizens of Ghana preferred their infrastructure to be publicly financed. For its part, the Government of Ghana appeared increasingly able to respond to developing public perspectives. A novel citizen survey was undertaken in 2010 for example, which sought to tap into community wisdom regarding water management and supply. In the forward to its final report from that survey, the Metropolitan Chief Executive of the Accra Metropolitan Assembly noted; “to deliver the needed service improvements, the Accra Metropolitan Assembly will need to work in partnership with its constituents, the residents of Accra. This means communicating more frequently with residents, and actively listening to residents” (WB, 2010, p. 1). The survey specifically explained that “all residents of the Accra Metropolitan Area aged 18 years and older” were targeted, covering “residents in each of the 11 city sub-metros” (WB, 2010, p. 135). Key conclusions included acknowledgement of community dissatisfaction with basic infrastructure, and suggestions that residents were willing to pay, or pay more, for potable water.

By contrast, the World Bank provided limited commentary on water financing at this time. Nonetheless, some rethinking of its position on PPPs was suggested. In a 2008 BBC report, the World Bank Director for Ghana, Ishac Diwan, now argued for a softened “middle-ground solution” to privatisation (Hooker, 2008). Mr Diwan is reported to have said; “it’s not about ideology. It’s pragmatic”. However, most other commentary from the World Bank at this time suggested the ‘Washington Consensus’ continued to dominate. In a 2011 document, the World Bank argued that “anticipated spending will not be enough to achieve sector targets, and that increased and more innovative financing, sector planning, better targeting, greater efficiency, and cost recovery approaches will be needed” (AMCOW, 2011, p. 2). Full cost financing was a key proposal. Some refusal to acknowledge mounting evidence of difficulties with PPPs was also apparent, in suggestions that water management in Ghana was largely a story of progress in recent decades. In a later 2013 report, some progress from these arguments was suggested, with acknowledgement that there had been some challenging PPPs in the past. However, supporting Bakker (2013) and Goldman (2007), the document concluded that this was largely attributable to poor governmental planning and management. “If clear arrangements for undertaking PPPs are not established with caution, they are likely to constitute a burden on the government and to erode efficiency benefits” (WB, 2013, p. 1).

By 2015, the World Bank’s Annual Report continued to endorse PPPs, making no suggestion of recent challenges. It explained that a key current goal was to “improve global knowledge about PPPs” and so explained that the Bank “helped to launch the PPP Knowledge Lab, a website containing quantitative and qualitative information about PPPs and private infrastructure” (WBG, 2015a, p. 19). Another World Bank Report at this time reiterated that
Ghana still had significant infrastructure financing problems, insisted that PPPs do pay off, and concluded therefore that further decentralisation and a renewed focus on privatisation were all critical (WBG, 2015b). Alternatively, in a document written for the World Bank, Thierry (2015, p. 16) argued bluntly that PPPs in most African contexts over the past 2 decades had been “mostly disappointing”. “In sectors such as electricity and drinking water, the institutional and rate reforms needed to make these projects viable for private operators proved impossible”. Nevertheless, the World Bank’s objectives as stated in August 2015 continue to be, to “improve the legislative, institutional, financial, fiduciary and technical framework to generate a pipeline of bankable PPP projects” (Aijaz, 2015, p. 1). In short, the World Bank’s ideologies did not significantly adapt to emerging evidence that for now, privatisation was simply unworkable in Ghana’s water sector. Supporting Bakker (2013) and Goldman (2007), a key argument developed was that governments were at fault, and better training was needed.

Confirming the World Bank’s unchanged position, 10 major new PPP projects for Ghana were announced by the Bank in 2014, including the ‘Asutsuare Water Project’ which the Ministry of Finance was apparently seeking to ‘fast-track’ (PB, 2014). Suggesting a reluctance to announce what they knew would be publicly unpalatable, the Government of Ghana did not also comment at that time on these developments. The only hint from the government of these developments, came indirectly in reporting on the progress of their ‘PPP bill’, which explained that the bill “seeks to promote a combination of policy and legal reforms, financing mechanisms, incentives and institutional support to boost private sector participation” (GoG, 2016). Goldman (2007) also observes that privatisation policies have become important pre-conditionalities in recent decades for heavily indebted countries to receive further loans.

Suggesting a growing confidence in knowledge about water deficiencies, costs, and solutions, a final documentary search in October 2017 revealed a surprising increase in water-related disclosures from the government. The GWCL website provided insight into two urban-focused projects located north of Accra in October 2017; the Kpong Intake Rehabilitation Project and Kpong Water Supply Expansion Project. Purpose, impact, and cost were all explained. New funding bodies including the China Exim Bank were disclosed. News Ghana (an online independent Ghanaian news site) elaborated, explaining that Accra had a daily deficiency of approximately 100 million gallons per day, and that this new infrastructure might ultimately contribute 40 million gallons per day to resolving that deficiency (NG, 2013). A ‘meet the press’ statement of 16 December 2014, from the Minister for Water Resources, Works and Housing also provided a brief overview of this ‘flagship’ project, explaining that it had already added over 65 million gallons of water per day to Accra supply (Collins Dauda 2014). In short, it would seem that an impressive reduction to supply shortfalls was being achieved at this time.

However, while the extent of water infrastructure developments commenced since 2011 seemed impressive, a key deficiency was that little was explained in any of these disclosures about how related projects were to be financed. In 2017, the GWCL website simply explained that current ‘development projects’ necessitated loans from external agencies amounting to $US35 million per annum."News Ghana’ confirmed that while the government was now more transparent about costs, details, and timing, limited transparency about financing persisted. News Ghana suggested that this was intentional, allowing fraudulent diversion of funding for other purposes; “such deception and open fraud between the Ghana Government with the collaboration of the Western financiers, has been responsible for Ghana’s backward situation. … It is also one reason why Western nations cannot criticize as Africa turns to China” for financing (NG, 2013).
In summary, the empirics presented here suggest that knowledge regarding water management, administration, finance, and engineering, all became more certain, for all key stakeholders (government, World Bank, and the public) in the period 2011 to 2017. Strategic improvements to public transparency were also evident. Perhaps cognisant of past failings, the government was now listening to and communicating with an increasingly powerful public. Progress in community engagement was evident in the development of clearer community-centric goals (for example, 100% water coverage by 2025). However, insight on financing, including the government’s on-going relationship with past private partners, remained opaque. Goldman (2007) observes that public mass mobilisations and protests in other developing countries, has driven some dismantling of compromised water financing arrangements. Our case adds by observing that in a context of on-going public concern about water privatisation, governments will avoid commenting on the specifics of new deals. This ‘backward situation’ in Ghana (NG, 2013), regarding concealment of national debt and PPP information, reflects on-going public concern regarding the unpalatability of private financing.

**How was power distributed?**

In this case, the World Bank continued to dominate key financial decisions up to 2017. The surprising revelation from the World Bank in 2014 of an urgency to push ahead with 10 new PPP projects, exemplifies the significant financial pressures exerted on the Government of Ghana. It is necessary to turn to the non-government Jubilee Debt Campaign (JDC), to learn how this impacted on debt. JDC (2016) reveals a significant increase to 2016, driving the need for further World Bank loans, just to service existing debts. However as we have argued, while this power imbalance made it virtually impossible to resist falling deeper into debt, the government also found some space at this time, to reflect on past PPP failings, and to engage with an increasingly vocal and powerful public. Through that engagement, the government was able to improve management skills and public transparency and develop water-related goals. Those goals now clearly articulated societal concerns for safe drinking water, and poverty reduction.

GWCL’s ‘History of Water Supply in Ghana’ provides insight into who were perhaps the least powerful stakeholders in this story; water sector employees. That document explained that all key staff contracts were amended in April 2015, subjecting them to performance improvement KPIs. The document concluded; “although the overall objective of the reform is to bring improvement in the urban water sector, the specific objective is to turn GWCL into a profitable utility company in the shortest time possible. The central focus on profitability here, indicates that the World Bank’s influence continued to reign supreme. Interestingly, this ‘performance improvement programme’ also implied that cost inefficiencies were the key factor contributing to poor profitability, and that staff were therefore, largely to blame. The reality however, is that revenue continued to be the greater profitability challenge in this sector. Without specifying how, the document finished by suggesting that recent efforts to improve staff performance had been “highly successful”. In short, any blame for past poor performance within GWCL was attributed to the failings of past privatisation partners, and to staff; no responsibility was directly accepted by the government, or the World Bank.

Adding to earlier evidence of developing community influence, the (then) President of Ghana also produced a document in December 2015 entitled ‘Accounting to the People’. Interestingly, the ‘accounting’ in this document focused only on several recent successful infrastructure developments, with little insight into financial impacts, or on what might not be getting done. A key message suggested, was that the government was now in control of an effective program of nation building. With respect to water, the document explained ‘over
US$1 billion worth of investment has been made in the last five years … which have taken both urban and rural water coverage to 76%’ (GoG, 2015, p 58). This seemed to be inconsistent however, with a Ministry of Finance document released in 2017, which stated that as of 2016 only 60% of urban populations had access to safe drinking water (MFEP, 2017). To add to this confusion, a ‘meet the press’ statement from the MWRWH of 9 August 2016, explained that with recent investments, 78% of Accra’s water needs were now met (Agyemang-Mensah 2016). Later, a subsequent undated meet-the-press statement indicated that 89% access was now being achieved (Kofi Adda, 2017). Despite these apparent inconsistencies, it is impressive that the government had apparently been able to turn water around so dramatically, since the first failed PPP experiment with AVRL in 2011.

A range of other disclosures of interest were also provided on the GWCL website at October 2017, adding to suggestions of a government which was now more empowered. A ‘completed projects’ page argued that ‘major expansion and rehabilitation works’ had been undertaken in recent years, and that the government was ‘aggressively looking for funding’ to support these projects. A ‘meet the press’ statement of 16 December 2014, from the MWRWH provided insight into how supranational power in the water sector was becoming more disbursed towards the end of this study. That statement named key current funding providers, including the World Bank, along with a range of private development banks including the US Exim Bank, as well as several Chinese development banks. Comments from the Chinese government at this time, seem to frame related projects as a response to their so-called, ‘silk road’ initiative, which aimed to open trading with a range of emerging nations. The online ‘China Daily’ reported that “China emerged as the largest provider of finance for infrastructure in Africa in the years between 2009 and 2012” (CD, 2017b). Much of the rhetoric arguing for the importance of this Chinese investment was economic. For example, in another 2017 China Daily report, Africa’s significant ‘infrastructure gap’ was explained as problematic because it was “holding back per capita economic growth … and lessening companies’ productivity” (CD, 2017b). In this report, water was linked closely to the importance of irrigation for agriculture, and transport projects were celebrated for their ability to “transform the way Africans travel and do business”.

In summary, powerful supranational steering organisations continued to dominate urban water management in Ghana to 2017. However, that supranational power was now more dispersed, with both new financiers, and increasing influence from government and the people. Improvements in knowledge drove improvements to control and accountability. That improved knowledge was reflected in a stronger articulation of community-related goals, focused on poverty reduction and safe water supply. Nonetheless, with an expanding influence of supranational financiers, myopic and unrealistic goals focused on financial efficiency and privatised funding, continued to reign supreme. Table 1 provides a summary of the conclusions drawn from the empirics in this paper. In so doing, Table 1 describes water management in Ghana from 2005 to 2017 through the lens of steering for sustainable development.

| Insert Table 1 about here |

Further discussion and conclusions

This final section considers how these developments and changing water goals, knowledge, and power, impacted on the achievement of ‘sustainable’ solutions. In so doing, empirical and theoretical contributions are formed. As we have argued, our case confirms observations from...
Bakker (2013), Goldman (2007) and others, that in recent decades, the World Bank continues to champion myopic arguments focused on government failure, and the importance of financial efficiency and free market rationality. What is unique in our case however, is evidence of a government that was able to work past that dominating ‘noise’, and find some space to respond broadly, with an increasingly vocal and influential community, regarding concerns for a universally available, safe, urban water supply. Empirically, that engagement demonstrates a government that was now willing to acknowledge some learnings from past challenges. A key learning articulated was that more communication with all stakeholders was needed. Through those engagement efforts, a renewed focus on water goals was able to develop, which now emphasised concern for poverty, equity, and public transparency. Some effort to articulate how social and financial targets for water should reconcile was also evident. The evolving argument was that the goal now should be 100% water coverage by 2025, which would require investment in the region of $US100 million per annum (or $US2 billion in total). However, while a broad public was engaged, the issues discussed were limited. Little public communication was offered regarding the cost of new infrastructure projects, the impact on national debt, or most controversially, the extent of private financing. With national debt soaring to record new levels by the mid-2010s\textsuperscript{12}, transparency about full financial implications was left intentionally opaque.

Power continued to remain significantly disbursed both horizontally and vertically, which continued to frustrate effective knowledge development. Horizontally many government agencies, technology providers, and consumer associations had a role to play. Vertically, several governance levels were involved, including the World Bank, and more recently, China. The significant on-going power of key supranational funding bodies was particularly challenging, given the persistent fixation on a mantra of financial efficiency. Here, frameworks were set at higher levels, but enforcement was expected locally. We argue therefore that in addition to engaging with broad cultural understandings of water (Schmidt, 2017), governments must counter Washington Consensus financial efficiency arguments, with a clear focus on core mission. In the case of water in Ghana, that mission remained, ‘sustainable water and basic sanitation for all by 2025’ (MWRWH, 2014, p. 16). Solutions to address the appalling water-related health challenges experienced in the past in Ghana (UNICEF, 2015), must be prioritised over financial efficiency and profitability. For their part, both traditional and emerging supranational steering media (the World Bank and China) must also learn to effectively engage with these key lifeworld challenges.

In summary, towards 2017, goals for water management in Ghana became increasingly less ambivalent, knowledge became increasingly more certain, but power remained disbursed across (an expanding) supranational sector. Finally, we can therefore consider how these changes were achieved, by relating our case to the five approaches to addressing challenges in steering for sustainable development, as suggested by Voß et al., (2007); regulation, shared visions, learnings, network governance, and reflective governance. First, some regulatory development was evident in this case, including the passing of a ‘PPP bill’. Voß et al., (2007) argue however, that regulation can only work within the current state of a system, and cannot affect improvement to flawed goals, knowledge uncertainty, or power imbalances. Indeed, the PPP bill merely smoothed the way to continue with one of the bigger challenges for water management in Ghana; the on-going dominance of World Bank, and its myopic focus on PPPs. Second, the Government of Ghana was able to achieve some progress towards a shared vision for water, through better public engagement. That better public engagement was evident in efforts to both better communicate with, and listen to, a broad conception of the public, including the government’s unique citizen’s survey on water in 2010. Third, learning was
evident in this case, focused on both technical and management skills. However, an inability to learn from past PPP failures, particularly amongst the most powerful players in this case (the World Bank), was critical to explaining the on-going uncertainty of workable financial solutions, and ambivalence of finance-related goals.

Finally, some tentative suggestions emerged in this study that the Government of Ghana may be progressing towards greater control of urban water management, through a developing focus on network and reflexive governance (Voß et al., 2007). Improved governance was evident in developing efforts to provide public accountability, to publicly debate solutions, and to listen to public needs. If the government can continue to develop these debating and bargaining practices, more effective solutions to the bigger challenges in this sustainability puzzle (the financing questions), might also be uncovered. A key problem stems from the fact that the people of Ghana remain poor, and simply have not been able to afford full cost for services like water. It is argued here that market governance is being forced upon non-“market oriented people” (van de Meene et al., 2011, p 1120). Our case reveals that network governance is therefore critical to achieving effective societal steering, for which effective public accountability is central, including open communication, sharing of information, and identification of risks (van de Meene et al., 2011).

Theoretically we contribute to Voß et al.,’s (2007) framework, by arguing that more democratic governance and public accountability can act as a counter foil to power imbalances. While Voß et al., (2007) suggested that shared visions for sustainable solutions through better public engagement are important, we contribute by showing how that public engagement might be achieved, and what its impact might be. Here we show that “the ability [for all citizens] to be recognized by city agencies through legitimate water services” (Anand, 2017, p. 8) is critical. Our case demonstrates that governments can move towards more knowledge and clearer goals through public engagement initiatives that both listen to, and communicate with, a broad cross-section of the public. Through that engagement, where few urban dwellers in Ghana had been ‘full water citizens’ in the past, spatial fragmentations of the supplied from the non-supplied were now diminishing (Bakker, 2013).

While sustainability and infrastructure challenges are highly contextual, governments in other developing countries might reflect on the lessons from this study. This study suggests that governments should not fear accountability and engagement with their people. In fact, in confronting infrastructure challenges, improvement to egregious community relationships, should be a key priority. By working together, governments and the public might begin to effectively confront the dominating influence of the greater adversary; the supranational funding providers. Here we argue that a recognition of the interlocking activities of market regulation, administrative reform, social mobilization, educational reform and “the shaping of social attitudes”, is critical (Voß et al., 2007, p 208; van de Meene et al., 2011). UNESCO puts it this way, “sustainable development cannot be achieved by technological solutions, political regulation or financial instruments alone. We need to change the way we think and act” (UNESCO, 2018).

The documentary approach taken in this study, avails a limited insight into the initiatives, challenges and perspectives of the stakeholders explored (the Government of Ghana, the public, the World Bank etc). Furthermore, a big unknown at the end of this study, is how the recent emergence of major new supranational players, particularly China, will impact into the longer term. Further studies could seek more direct engagement with such stakeholder groups, to better understand how progress is achieved with goals, knowledge and distribution of power.
in steering towards the UN’s identified ‘sustainable development goals’ (UN, 2015). We argue once again however, that a solution in the best interests of the people of Ghana might best be achieved, if the government can work effectively and transparently with its people. The World Bank and now China, will continue to be key supranational steering organisations impacting on developing countries like Ghana. If as supranational steering media, their aim is to lead national resource management processes to success, they need to acknowledge and accept the social complexities of resource delivery in different life-worlds (Hirvi and Whitfield, 2015). Solutions are not simple, but the nation’s core mission for sustainable development, basic human rights, accountability, and poverty alleviation must remain paramount. A focus on that complex and challenging mission might best be maintained, where governments remain open to coordinating and working with the perspectives of all key stakeholders.

**Bibliography**


Appendix A

Data sources utilised in this study (full references provided in the bibliography)

Government of Ghana websites and documents:
GWCL (Ghana Water Corporation Limited) website.
MWRWH (Ministry of Water Resources, Works and Housing) website.

Documents from the former private partners to the water contract, and related industry bodies:

Documents written by or for financiers including the World Bank and Chinese development banks:
CD (China Daily). (2017a)
CD (China Daily). (2017b)
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World Bank Group, (WBG). (2015a)
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Documents from media and community stakeholder groups (including United Nations):
Amanthis, J. (2012)
Elliott, L. (2016)
Hooker, L. (2008)
ISODEC, (Integrated Social Development Centre). 2013
JDC, (Jubilee Debt Campaign). (2016)

Academic contributions addressing water management in Ghana:
Adams, S. (2011)
Amenga-Etego, RN and S Grusky (2005)
Atarah, L. (2015)
Fuest, V and SA Haffner. (2007)
Rahaman, AS, J Everett and D Neu. (2007)
Rahaman, AS, J Everett and D Neu. (2013)
Zaato, JJ (2014)
Several UN bodies and departments have made the needs of African countries a global priority, for example UNESCO (https://en.unesco.org/).


‘Non-revenue water’ describes water usage that is not billed (as a result of leaks, illegal tapping etc). Non-revenue water in Ghana had hovered appallingly at approximately 50% for decades.


The Jubilee Debt Campaign calculate that total Ghanaian Government external debt had risen from USD14.7billion in 2013 to USD21.1billion by 2016 (JDC, 2016).
Figure 1: Visual representation of the Voß et al., (2007) ‘Steering for Sustainable Development’ framework
Table 1. Describing urban water management in Ghana - 2005 to 2017

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<td>Examination of new data – publicly available web-based documentation</td>
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