

**Profiting from Water Security:  
Theories and Practice of Private Sector Participation**

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***Abstract***

The role of private sector involvement in water security has been a highly contested debate for many decades. The movement towards privatization of water in the 1980s and 1990s resulted in failure, in many cases, to provide adequate and equitable access to water for the majority of the world's population, with private sector reaping the profits. However, since then, a shift to re-publicize water supply and remove the private sector in water supply and management has not solved issues of water insecurity. Drawing on case studies from past and present involvement in water supply and management, this paper analyzes the role of the private sector as a supplier, a manager, and major industrial user of water. It concludes that only once we accept the responsibility that the private sector has to its shareholders to maximize profits, can we see the important role that the private sector plays in providing innovative approaches to water security, ensuring future sustainability and equitable access for all.

***Introduction***

Water security remains a crucial issue worldwide: 2.1 billion people currently lack access to clean water; in response to a national drought, South Africa's Department of Water and Sanitation has issued an urgent statement to "Pray for Rain"; and 64 of the world's largest multinational corporations state one the biggest threats they face is access to steady and clean water (WHO, 2017; South African Department of Water and Sanitation, 2018; Water Resources Group, 2012). While these three issues may seem to be distinct from one another, only relatable

by their association with water, they are all, in truth, different views of the same issue of water security, represented by various actors within the water system.

The 2.1 billion people in the world without access to clean and safe drinking water represent the general public and civil society whose claim to water is on the basis of human rights. Meanwhile, South Africa's Department of Water and Sanitation's "Pray for Rain" response represents the under-resourced, poorly managed and inefficient public sector under whose jurisdiction provision of water, as well as water management and sanitation have traditionally fallen under. Finally, the 64 firms represent the private sector (in this paper defined as any large multinational company operating in foreign countries as well as any large, private national corporation excepting agricultural operations) who traditionally view water as an economic good that is vital both as an input to processes and as an output product.

Understanding that these three entities, which exist in nearly every water system in the world, are all facing the same issue of water insecurity is critical moving forward. Even more important though, and only beginning to be recognized, is that because water is such a unique good (not easily transported, it's bulky and not fungible), any solutions to water insecurity within a given water system will necessarily be composed of interdependent functions of these three actors: the general public/civil society, the various levels of government/public sector, and the private sector. This paper will focus on the evolving perspective of the role of the private sector within the realm of water security.

Much of the contemporary literature around private sector involvement in the water security debate focuses on the 'role' of the private sector. Whether it's Newborne & Mason (2012) discussing the "role" of the private sector in water management, Karen Bakker (2012) discussing the "role" of the private sector in innovation, or even the private sector's own *CEO*

*Water Mandate* discussing the “*role*” of the private sector in “stewardship” and “governance”, the argument is always framed as if the responsibilities of the private sector change depending on their involvement in the system. This view is incorrect, and while the private sector is certainly multifaceted and private sector firms’ operations will depend on the capacity in which they are employed, the *role* of the private sector never changes; the primary *role* or responsibility of any private sector company will always be to maximize profits. Whether the private sector firm is providing technical knowledge, technology and expertise to build dams and other supply augmentation projects such as those undertaken in the mid-20<sup>th</sup> century, or the firm has completely taken over water management and sanitation due to under-resourced and inefficient governments, as was the case in the latter part of the 20<sup>th</sup> century, the firm’s role to maximize profit remains. It is this maximization of profit which yields the strengths of the private sector - capital accumulation, technical expertise, innovation, efficiency and productivity - and it is these strengths which are sought after in making progress in global water security.

So, if the ‘role’ of the private sector has not changed, then what has? This paper will argue that the international and local perspectives of the private sector, and the corresponding level of their involvement has changed. Thus, due to the international and local drivers of the past (such as state centric economic theory, neoliberalism, and civil movements) the private sector was perceived (incorrectly) as an external resource or tool to be brought into the water system from outside for its aforementioned strengths. Now however, current drivers in the international and local system (Integrated Water Resources Management, Public-Private Partnerships) have a new perspective which views the private sector as a stakeholder within the system, hence the new deployment of their profit-making role. Ultimately though, in examining the current global water security outlook, it is evident this shift in perspective has not been

enough. Therefore, moving forward a further shift in perspective of the private sector needs to change in order for true progress in water security, recognizing the private sector not only as a supplier or user, but also an innovator, an importer of water, a steward, and a resource/tool. Then it can be determined how to best deploy their profit-seeking role to best serve all actors involved so that when the the private sector profits, everyone profits.

### ***Past Involvement: Privatization of Water***

The controversy surrounding participation of the private sector in water security is typically focused around the argument of water as a human right versus an economic good. Since water is seen as a basic human right, it can be argued that water should be supplied and managed by the state as they represent the interests of the people, not the private sector that represents shareholder profits. However, billions of people remain without access to clean water. Perceptions of water have changed since the 1970s and neoliberalism (Bayliss, 2014).

Bayliss (2014) argues that “from a strategic and abundant resource delivered as a public service, water came to be treated as a private commodity with an economic value” (pg. 294). Furthermore, Bakker (2005) states that “from a neoclassical perspective, the conversion of a resource into an economic good is necessary if water is to be more efficiently managed” (pg. 545). Water as an economic good is now promoted by international agencies like the World Bank and acknowledged by international declarations like the Dublin Principles (Bakker, 2005). Principle 4 of the Dublin Principles clearly states that water is an economic good with economic value (*The Dublin Statement*), which implies the participation of the economy and private sector.

From technological innovation to financial investment, the private sector has always played a role, either direct or indirect, in water security. Water projects like supply augmentation, hydropower, and the infrastructure for WATSAN systems all involve the private sector in some

way or another. However, it is hard to argue what single event was the first involvement of the private sector in water security. Historically, the private sector has played a significant role in water supply and management with a heavy focus in the past 30 years on the privatization of urban water and sanitation systems after states worldwide failed to efficiently supply water to all their citizens.

### *“Market Failure” Vs. “State Failure”*

Prior to the 1980s, WATSAN systems were dominantly owned and managed by the state (Bayliss, 2014). In her paper entitled *The Financialization of Water*, Kate Bayliss (2014) argues that the shift from “market failure” to “state failure” in urban water supply led to growth of water privatization. Public ownership of water systems was validated because of the market’s monopolistic structure and pervasive externalities, which Bayliss (2014) classified as the “market failure”. However, after the economic depression in the 1970s, governments’ actions were constricted by their tight budgets, and “market failure” was replaced by “state failure” (Bayliss, 2014). The inability of governments to finance infrastructure or meet growing environmental concern indicated the need for alternative approaches to water management (Bakker, 2005).

This “state failure” led to a major push for neoliberal policies and the privatization of publicly owned sectors, like water. Since the 1980s, water privatization has been a popular topic and many countries and cities have denationalized their WATSAN systems with some success and many failures. Some of the arguments in favour of the privatization of water include more effective monitoring, removal of agency problems, more flexible and timely financial investments, and reduction in inefficiencies (Bayliss, 2014).

Still, there are problems with urban water supply privatization, especially in terms of conflicting motives and which parties are benefiting. The high capital costs with long payback

periods detract many private companies from entering the water supply industry. Therefore, many governments have attracted the private sector through advantageous contracts, which can guarantee profits and hand over full control of the water. The next subsections will review two very contrasting cases of water privatization: the country of England and the city of Cochabamba, Bolivia.

### *The Case of Water Privatization in the England*

Under the leadership of Margaret Thatcher, the British government decided to take a neoliberal approach by fully privatizing water and sewage utilities in 1989 after the deterioration of water supply infrastructure from the post-war economic boom (Bakker, 2005). Prior to privatization, water and sewage were publicly owned and operated, pricing of water was linked to property value, and water usage was not metered (Bakker, 2005). Dore, Kushner, and Zumer (2004) state that the believed reasoning behind privatization was “increased competition, the greater efficiency of the private sector and the greater financial ability of private companies to finance the large investments needed to repair the water systems and to meet new European standards of water quality” (pg. 43).

Ten, mostly British, companies purchased the control of different regions with the contractual obligation of large financial investment, which resulted in investment of about 40 billion GBP (company breakdown shown in Figure 1 of Appendix). To monitor these companies and their actions, the British government established three regulatory bodies: the Office of Water Services (OFWAT), the Drinking Water Inspectorate (DWI), and the Environmental Agency (EA), which regulated the price of water, water quality, and environmental pollution, respectively (Dore et al., 2004).

Dore et al. (2004) studied the results of water privatization in both the UK and France, and some of the key findings from their study on England included: the average water bill increased by 46%, the average total pre-tax profit for the companies increased by 142%, the household disconnection rates tripled, and the number of employees decreased. These findings highlight many of the arguments against privatization. Soaring prices for consumers led to disconnection and inability to access a human right while companies made unnecessarily high profits. On the other hand, privatization did result in water quality and environmental improvements. For example, the percentage of the rivers and canals classified as very good or good increased from 48% in 1990 to 60% in 1995 (Dore et al., 2004).

Water and sewage utilities in England remain fully privatized. The country's water system has been used by academics and policy makers as an example of a successful model for water privatization (Bakker, 2005). Despite that, Dore et al. (2004) argue that attributing water system improvements to privatization is difficult because, regardless, England needed to make improvements to comply with EU regulations. Although benefits were limited, the privatization of water in England further pushed the neoliberal argument for water privatization on cities worldwide.

#### *The Case of Water Privatization in Cochabamba, Bolivia*

After the privatization of water supply in many developed cities and countries like England, the push for water privatization in developing countries started. One case was the city of Cochabamba, the third largest city of Bolivia. The privatization of Cochabamba's water system is one of the most well-known failures in the history of water privatization. Also referred to as the Guerra del Agua or "Water War", the government's decision to privatize the city's water ended in protest and unrest by civil society.

The city of Cochabamba had a history of water problems, especially with the unequal supply of water. Before the decision to privatize, the only parties connected to the municipal water system were large companies and wealthy households. The other half of the city's population, which included the majority of the indigenous population, relied on water supply from private wells, truck delivery, and community-run water systems (Bakker, 2008). Because of these problems, the Bolivian government received pressure from the World Bank and international financial institutions to sell all publicly-owned utilities to large multinational companies (Otto and Bohm, 2006). Cochabamba's water supply system was purchased by Aguas del Tunari, whose largest shareholder was the Californian-based company Bechtel (Otto and Bohm, 2006). The contract gave Aguas del Tunari guaranteed profits of 15% and exclusive rights to all the water in Cochabamba, even the private wells that many low-income civilians relied on (Bakker, 2008). For some of the poorest households, the price of water increased by a staggering 300% (Otto and Bohm, 2006).

With the goal of gaining back control of their water and increased efficiency and transparency, the Coordinadora de Defensa del Agua y de la Vida, or the Coalition for the Defense of Water and Life, was established and led massive protests in 2000. The civil societies' resistance against the privatization of water eventually led to Aguas del Tunari surrendering the control of Cochabamba's water back to the government and a reform of national water legislation (Bakker, 2008). This reform included protection for rural irrigators.

Although the people of Cochabamba were successful in reverting their water system back to publicly-owned, the main goals of the coalition surrounding efficiency, democratic decision-making, transparency, and universal water access remain unreached (Bakker, 2008), making it difficult to argue the success of the coalition. Cochabamba's "Water War" has been celebrated

for the people's ability to join forces and mobilize, but its water supply system remains fragmented (Bakker, 2008). In comparison to England's privatized water system, the company that purchased Cochabamba's water was multinational and no regulatory parties were established to protect the citizens. Additionally, there was a higher risk of exploitation from the private sector, due to Bolivia's status as a developing country. Otto and Bohm (2006) argue that the failure of both water privatization and universal water access in Cochabamba demonstrates the need for innovative, alternative ways to organize public services.

### ***Present Involvement: Current Roles of the Private Sector***

The transition from state-governance to privatization of water has, in many historical cases, been extremely disappointing, lagging far behind anticipated outcomes and with negligible impacts (Bayliss, 2014). Literature reviews abound with critiques on private sector involvement in water security, deeming past failures as a complete negation of their potential role, both in the present and future. As the June 2012 UN Communiqué outlined, however, in many cases, public-sector water institutions are failing in their role of water governance custodians as well (Newborne & Mason, 2012). While complete privatization of water did not result in the silver bullet solution many were hoping for, the private sector still plays an important role going forward, both as a supplier and major industrial user of water.

Multinational companies' (MNCs) engagement in water now reaches far beyond the provision of urban water, which dominated the debate of private sector involvement in the 1980s and 1990s. Rather than sole providers of water services, the focus has shifted to the private sector as both user and manager of water. As outlined by Newborne and Mason (2012), MNCs have presently become the focus for water resource management, as they have the scale, capacity and resources to make a larger impact (both positive or negative), and arguably, stronger incentives

to do so than individual, small businesses. “The presence of MNCs in developing countries not only brings economic activity and jobs but also creates demands on natural resources, including water. That is an especially important issue in areas where there are significant limits and constraints on water resources” (Ibid, pg. 604). It is important to consider the opportunities and challenges of private sector participation in water as both user and supplier.

As Grafton, Horne, and Wheeler (2016) point out, a commonly held view is that unless business as usual changes, water-related problems and scarcities will only get worse over the next several decades. The private sector has always shared water risks with communities, government, and the environment; however, the imperative to act on these risks in the past and the means through which actions were taken have differed from those emerging today (Hepworth, 2012). In today’s highly interconnected, globalized, and increasingly water-stressed world, “the combination of corporate power potentially wielded with great integrity because of unparalleled public scrutiny on water-equity issues is a heady mixture of opportunity” (Ibid, pg. 558). While risks and values of water may differ between actors, corporate enterprises and the public share the same basic need for reliable water services and sustainable water resources management (Ibid).

Over the past decade, corporate actors have increased their level of activity and shifted roles they take on in water resource management. Innovative approaches are now required to improve both water supply and demand management. The key questions to be considered in the following section include: how is the private sector currently involved in water resource management, and how are these roles relevant for future opportunities of the private sector?

*Understanding Multinational Companies’ Underlying Purpose*

Mismanagement and unsustainable water use has major social and environmental ramifications. The role of the private sector in water is often diminished due to their differing goals from society, however it is important to consider their underlying purpose in order to find areas for potential alignment of values. To ensure equitable access and use of water by all actors, it is imperative to understand the underlying role that the private sector plays in water supply and demand management. The foundational responsibility of all multinational companies (MNCs) is to its shareholders. As Newborne and Mason (2012) point out, the laws and constitutions (written within the framework of those laws) of a corporate entity determine how it is configured and governed. It defines what the company is for, what it sets out to do, for whom, and how it manages its internal and external relationships. These corporate laws then inform whether MNCs seek to serve the interests of shareholders to the exclusion of all others, or if practices extend beyond its existence as a profit-making enterprise to include contributions towards non-shareholder stakeholders in the community within which it exists.

In addition to internal corporate laws, external laws exist that shape the way the private sector interacts with the environment in which it operates. Existing laws (or lack thereof) around private sector participation in the supply and industrial use of water do not currently ensure sustainability and equity, often resulting in limited legal requirements for the private sector to consider the needs of and impacts on other stakeholders. As a result, the Global Corporate Governance Forum (UN, 2009) argues common standards ought to exist, ensuring that companies take a longer-term view that “integrates environmental and social responsibilities in analyzing risks, discovering opportunities and allocating capital in the best interest of shareowners”. Several questions arise then: (1) how far do the responsibilities of companies extend to stakeholders beyond the confines of the corporate entity, and (2) what roles do the

private sector currently take as profit-maximizing entities while still enabling government and civil society to simultaneously profit?

### *Innovations Through Water Technology*

With many changing and socially defined functions, uses and values, water is a highly complex resource and its management requires continual reconciliation of trade-offs between public and private actors and interests (Hepworth, 2012). Relevant and appropriate responses to these various, sometimes conflicting interests will be a challenge in the “infinitesimally diverse water contexts existing in the global supply chain” (Ibid, pg. 549). However, current private sector involvement in water resource management has, arguably, allowed for alignment with social and environmental interests in particular areas through innovative means (Newborne & Mason, 2012). The present roles of the private sector includes innovative improvements in technology to reduce volumes of industrial water use in MNCs, opportunities for recycling and reuse of water, as well as exploring new “water-tech” opportunities (Ibid). Examples of Coca-Cola and PepsiCo can be cited for having reduced their water usage by increasing production efficiencies. While this is in their best interest to minimize input costs, it simultaneously aligns with environmental interests. But while increasing water usage efficiencies is imperative, it doesn’t negate the overall use and access to water by MNCs. The role of the private sector in water management must thus be considered both in terms of innovative approaches to water supply as well as demand management for industrial use.

### *Water Desalination*

One prospective solution to issues of water scarcity is to increase supply. Chronic water shortages due to persistent drought, population growth, industrialization and increasing demands of water per capita place greater strain on already limited and poorly managed freshwater

resources. Many regions in water stressed countries have chosen to augment their supply with desalinated water to meet the continuously growing demands of population, industrial, tourism and agricultural developments (Drouiche et al., 2011). Although desalination has been considered a non-conventional approach to water supply management, countries such as Qatar and Kuwait rely 100% on desalinated water for domestic and industrial use, and Saudi Arabia's reliance is 60% (Ibid). This growing demand for innovative water approaches is further enhanced by the decrease in cost of desalination, due mainly to the improvements of technology and competition. Desalination has become the main source of potable water in many countries such as Gulf States and the private sector plays a very important role as water supplier in these contexts (Ibid).

Drouiche et al. (2011) consider the scope of impacts in which the new desalination program, launched by the Algerian Government, currently has and is projected to make in future years. Algeria has been investing in various desalination technologies since the sixties, however mostly for industrial use. Until the severe drought of the past decade, Algeria concentrated its water planning on the development of dams and reservoirs. With the impending drought, the Algerian government was forced to think beyond water storage to consider desalination possibilities more closely. Between 2002 and 2004, the Ministry of Water Resources carried out a study on desalination to define a strategy for short, medium and long terms. Growing investment including its five recent mega-projects have increased Algeria's total desalination capacity to 1,461,920 m<sup>3</sup>/day, with an anticipated capacity of 3.5 million cubic metres per day in the coming years.

Algeria has become one of the fastest growing countries in terms of its desalination capacity, alongside Australia and Spain (see Figure 2 in the Appendix). More than 70% of

Algeria's desalinated water is used for municipal purposes with 27% being used for industrial purposes (Ibid). It is important to note that all of the desalination plants are under the Build Own Operate/Design Build Own Operate (BOO/DBOO) contract types except the Kahrama MSF plant which is under IWPP (Independent Water and Power Procurement) contract. Under the BOO contract type, the Algerian government avoids any failure in operating the plants due to lack of unskilled local manpower as this remains the duty of the private sector.

Water pricing is a vital issue for the full cost recovery of desalination projects; water pricing is fixed by the Algerian government with extra production costs covered as subsidy. This entices private sector investment while also attempting to address the issue of capital accumulation and inequitable distribution by MNCs. Future desalination projects by Sonatrach (an Algerian, government-owned company) plan to establish a local construction company in order to localize desalination technology. This government-supported initiative is part of the strategy to build human capacity in desalination and promote private sector investment in water management (Drouiche et al., 2011).

### *Marketization of Water*

The traditional prescription in the past to meet growing water demands has been investments in water supply including dams, pipelines, and other physical infrastructure. However, in many parts of the world, the challenge of managing water demand by increasing supply is no longer an option or only possible at much higher costs than in the past. Many freshwater resources have been overexploited and governments at all levels are now forced to consider water demand management strategies that place adequate value on the scarcity of water (Grafton, Horne & Wheeler, 2016). An alternative perspective must therefore balance current

levels of water supply with existing and anticipated demand. An example of water demand management can be seen in the marketization of water in the Murray-Darling Basin, Australia. Grafton, Horne, and Wheeler (2016) analyze the impacts of the MDB water market, establishing it as a successful and efficient means to reallocate water between users. In this case, the private sector plays an important role as major industrial user, rather than supplier.

While marketization of water is synonymous with commodification, it need not be antithetical to the ‘commons’ concept, with guaranteed results of corporate exploitation and appropriation by accumulation (Ibid). It has been shown that both community and environmental values have been incorporated into the design of water markets, as planning considered the trade-offs between consumptive and non-consumptive (cultural, social and ecological) uses (Ibid). The MDB water market consists of the buying and selling of two types of water rights: (1) water allocations or physical volumes of water, and (2) water entitlements – underlying rights to an ongoing share of water which varies in terms of the proportion of time an entitlement receives its nominal allocation. The federal government’s responsibility is to monitor and enforce overall water market rules to ensure sustainable water resources management, preventing trades it deems undesirable, and reducing water allocations as needed. As Grafton et al. explain, the Australian government purchases entitlements for environmental use (known as ‘held environmental water’) to reduce water planning risks to environmental flows. These entitlements hold the same rights as those of other corporate actors, thus preventing overallocation or over-extraction of water resources by private sector users of water and protecting ecological values and ecosystem services.

Evidence from the MDB has shown that water markets have: (1) increased end-of-system flows during the Millennium Drought, (2) provided a key adaptation strategy to restructure and

survive water scarcity for the private sector and, (3) provided a cost-effective option to enable governments to reduce over-extraction of surface water within the basin (Ibid). Water markets, coupled with effective water planning and regulation have thus made a positive contribution to economic, environmental and social outcomes in the MDB, indicating the potential of water marketization to be designed to increase efficiency, maintain equity in access and use, and improve environmental outcomes in other contexts as well (Grafton et al., 2016).

Both cases of desalination in Algeria and the marketization of water in the Murray-Darling Basin in Australia show the important role that the private sector can and does play in water system supply and demand management. These innovative approaches to water security present key opportunities for future consideration of the role of private sector involvement.

### ***The Future of Private Sector Participation: Where do we go from here?***

While the above sections discuss the progress made in reconciling the different capabilities of private sector involvement in water security; i.e. the private sector as a major industrial water user, the private sector as an actor within the WATSAN systems, and the private sector as the engine for research, development and innovation, there is still much work that needs to be done. This section will seek to address the continued existence of conflict within water systems, even given the progress since the 1980s and 1990s, and then posit recommendations for how private sector corporations can address these problems moving forward. In regards to the private sector as an end user, the largest impact will come from increased transparency, both internally (within the corporation itself) and more importantly, externally, both at a national and local level. Meanwhile, though emphasis has shifted away from the complete privatization of WATSAN systems to increased public-private partnerships, there is still further need for greater accountability to ensure a check on the profit seeking motives of the private sector as a supplier.

Finally, alongside greater transparency and accountability, there is a need to rethink and reform investment strategies. This investment reform will need to both increase internal R&D efforts by the private sector with an assurance to transfer this technology globally and increase the absolute amount of investment in water technologies. By following through with increased attention to these three factors of transparency, accountability and investment reform, one can expect a greater and formalized flow of information between all of the actors involved in any given water system/water basin, an institutionalized check on the profit driven motives of the private sector, and more equitable access to innovative water technologies in developed and developing countries.

*Transparency: Private Sector as End User*

According to the USAID report *Water and Conflict* one of the major reasons for continued conflict between actors in the water basin/water system is a lack of information, or the perpetual reinforcing of misinformation (Kramer, Annika 2014). To account for this, the current popular method of conflict resolution has been Integrated Water Resource Management. Within IWRM, there is a focus on institutionalizing the relationships between actors within a given water basin. One such result of this institutionalization is said to be the ability to increase communication and cooperation between the actors by bringing them together to discuss the ‘shared risks and values’ of any policies or actions taken within the basin (Moriarty, 2004). However, what IWRM does not account for, and that which has been a deterrent to progress, is the fact that although all actors are convening to discuss shared problems, this does not necessarily mean all come to the table on equal footing. In actuality, many of the MNC’s will come to the table with greater economic as well as political power when setting up operations in a developing country (Mason, 2013). Whether this unbalance is real or perceived, it does not

matter in many cases. Therefore, moving forward, in order to dismiss the real or perceived favor given to private sector actors and to increase cooperation and the effectiveness of IWRM, there needs to be more than a discussion, there needs to be data driven transparency.

In the case of this paper, data driven transparency refers to information provided to all actors within a water basin which is supported by raw data. The reason this data driven transparency is so important is because it eliminates the need for trust between actors in the system as any information provided about water usage, wastage, efficiency, and safeness can be verified through observing data. However, aside from in the EU, there exist no laws or policies which mandate that private corporations must divulge information in regards to their sustainability practices (EU Parliament, 2013). Therefore, an “information gap” is created between the private sector and the other actors in the water system (Mason). This information gap then permits room for misinformation, misconception and conflict between the private sector, the public sector, and the civil society.

Thus, the first recommendation for a reduction in conflict between the private sector as an end user of water and civil society, the general public, and the government is to establish a formalized sustainability reporting mechanism. Currently, the only somewhat widespread sustainability reporting practices of MNCs with operations overseas are born out of the CEO Water Mandate. This mandate requires all corporate signatories to release a sustainability report. However, each report can be, and generally is, compiled and published by the corporation itself (Hepworth 2012). Therefore, it gives power to the corporation to strictly discern which data to release, and more importantly, *how* that data is presented. While some may argue that this presentation of data is beneficial in scope and allows corporations to designate areas in which they are improving so as to increase their reputation in their given markets while simultaneously

contributing to efforts of water security, there also exists the possibility that the information selected to be released is misleading and actually detrimental to the rest of the system. One example which illustrates the potential for detriment to a water system as a result of corporate self-reporting can be found in examining Coca Cola, Pepsi Co, and SABMiller, three prominent signatories of the CEO Water Mandate. Each of these companies releases their own sustainability report with data on water. In these reports, each company has chosen to release the data on their water efficiency per product produced. This data, presented as the water within the bottles (see Figure 3 in the Appendix), shows that over the course of 5 years, the amount of water needed per individual product (a bottle of soda/beer/etc.) will decrease, thus displaying a technological increase in efficiency (Coca Cola, 2016). This information alone may then indicate that companies are then being more responsible with their water usage. However, the information not provided in their report is the amount of products made in that given year, this is represented as the bottle in which the water is located (See Figure 3 in the Appendix). Thus, what can be seen is that although water efficiency is being increased, the amount of products created is also increasing in all cases except SABMiller. There is a rebound effect: the more efficient corporations are with their water, the more products they can then create with the same amount of water or the marginal cost of increasing water is reduced. This data then tells a different story. In the first scenario, wherein only the corporation reported water efficiency data is presented, an individual who shares the same water basin with Coca Cola or Pepsi Co may be happy with this progress and naturally assume if Coca Cola and Pepsi Co are being more efficient with their water, meaning more water available to him or her. However, when the amount of product is taken into account and one is able to discern that the absolute amount of water being used is remaining constant or even increasing, this presents more truthful, useful,

and impactful data for the other actors in the water basin. Thus, in moving forward there needs to be either access to *raw*, unprocessed data from private corporations, or a legitimate third party reporting mechanism which can verify any information provided by the corporations.

Though the concept of increased transparency between private corporations and the community/basin/system in which they are located is of utmost importance to increased cooperation and reduced conflict in efforts to achieve water security, there also exists a need for greater internal transparency on behalf of individual private sector actors. What internal transparency refers to here is greater understanding of the ‘water footprint’ of a given corporation throughout its supply chain. When large private sector corporations set up operations within a country, in many cases they have extensive, national, or even global supply chains. However, any attention or reporting done in regards to water usage tends to only look at operations at an individual plant or in an individual country. Thus what is not being taken into account is the amount of water imported to that final destination where the product is made or sold. This imported water, also known as “virtual water”, can have significant impacts on water security both for the firm itself as well as within the global water system (Hoekstra, 2003). However, at this point in time, there is little scrutiny on behalf of corporations as to how much water is used, wasted, or polluted within their supply chains. This is particularly important when a private corporation is sourcing many of its resources from water stressed areas to be sold abroad, thus taking water out of an already stressed system. Thus, if large MNCs are listing threats of water security to be one of the biggest challenges facing their operations moving forward, the first action these companies should take is to look inward and increase the knowledge and transparency of water usage within their supply chains.

*Accountability: Private Sector as a Supplier*

One of the major lessons learned from the Cochabamba Water Wars, as it pertains to private sector engagement in WATSAN systems, is that civil society has the ability to play an important role as a check and balance to the profit driven motives of private firms. However, due to the violent and informal manner in which Cochabamba unfolded, this is not a preferred nor sustainable method of keeping private firms accountable within the water supply sector. Rather, there needs to be a formalized and, preferably, institutionalized mechanism for further accountability of private sector corporations involved in WATSAN.

While attempts have been made within WATSAN systems to create a formal and accountable vehicle for private sector engagement in water supply, distribution, and sanitation via public private partnerships (PPPs), the absence of the general public and civil society in these agreements has resulted in continual inconstancy of equitable access to urban water. In a 2009 review done by the OECD on the effectiveness of various PPP's, it was found that "many concessions failed to invest the amount of private funding they had originally committed, and did not meet their original contractual targets for coverage" (OECD, 2009). Even in cases where there is an open bidding process in which public sector companies can try and win a contract for water supply and sanitation, private sector companies routinely underbid to secure the contract and then do not deliver on the contractual obligations (Strayhorne, 2014). Therefore, to negate the power disparities between developing countries and private corporations involved in WATSAN, there needs to be an institutionalized system, whether international, i.e. via The World Bank or IMF, or a created national institution which will hold private sector firms accountable. Taken together with increased transparency, these factors will increase the level of trust between the three major actors within water systems: the private sector, the public sector and the civil society.

### *Investment: Private Sector as an Innovator*

Finally, the last area which needs major reform, as it relates to private sector involvement in attaining water security, is investment. One of the biggest strengths of the private sector is the amount of resources attributed to research, development, and innovation. However, even though water security is directly acknowledged as an area for investment in the Addis Ababa Action Agenda, both through the Technology Bank as well as through direct financing incentives, there are still relatively low levels of investment going towards water technology (UN, 2015; Newborne & Mason, 2012). Currently, as was discussed prior, much private sector investment in developing countries for water technology has been focused on the capital intensive and potentially environmentally destructive desal plants. While desal technology has increased greatly and its implementation is on the rise, the capital requirements make these technologies only available to those countries with excess capital, such as the Middle Eastern nations, that can be heavily involved in desal. Those countries with less financial resources and capital cannot afford these plants. Instead then, there should be a push for greater technological sharing and investment in more affordable and scalable technologies. One such example is increased investment into decentralized rain collection technologies which provide sustainable, scalable, and local access to rainwater supplies (Partzsch, 2009). Other examples could be increased investment in standalone or individual water filtration systems for rural communities, more water efficient household appliances or waterless sanitation devices. Increased investment and funding for this type of technology would put to use the strengths of the private sector while also serving a public need.

Alongside increasing investment in water technologies, there is a need to revamp where private sector technologies are deployed. One area many private sector corporations have

directed their research and development resources has been wastewater management, treatment, and reuse. However, in looking closer, one can see that the majority of the investment into these technologies takes place within plants operating in developed countries (Vorosmarty, 2010). This then allows the developed countries, with the highest consumption of water, to offset their stressor levels through increased technological recapture processes. Meanwhile, developing nations in which the same private sector corporation has operations do not receive these technologies, thus the benefit is again inequitable. Thus, in the future either national governments will have to increase their regulations to ensure that the technology is transferred to operations and subsidiaries in host countries, or, as part of the ongoing push towards corporate “water stewardship” individual corporations should be increasing the funding for, and, availability of these technologies in developing countries.

### ***Conclusion***

When considering the future roles of private sector involvement in water security, it is important to balance the interests and values of private and public sectors. Moving forward, it is imperative to recognize the private sector’s responsibility to its shareholders to maximize profits. However, this need not be to the detriment of civil society and the public sector. By understanding the responsibilities of the private sector’s interconnections with the interests of civil society and the public sector become apparent. Additionally, there is a dire need to formalize these interconnections and to establish greater transparency and accountability on behalf of the private sector as further progress is realized within IWRM. As a result, the private sector can play an important role in water security so that, when the private sector profits, everyone profits.

Solutions to growing water challenges lie, in part, with the development and adoption of new innovative technologies that ensure the profitability of the water sector while also safeguarding sustainability and equitable access for all. The examples outlined in this paper showcase past involvement in the privatization of water that may not have been deemed successful but demonstrate the need for alternative approaches and present innovations of the private sector that have proven to alleviate water stress in key countries across the world. In comparison to other major sectors of the global economy, investment in water innovation has been extremely low (Ajami, Thompson, & Victor, 2014). This lack of investment in innovation provides a large landscape of opportunities for increased innovations and private sector involvement in the future as supplier, manager, and major industrial user of water.

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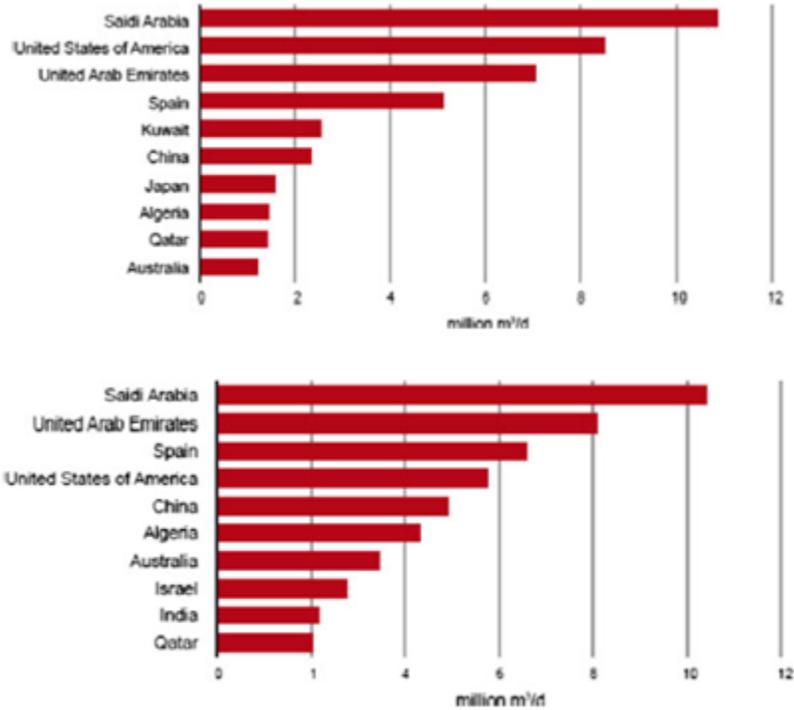
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## Appendix

Company	Ownership	Parent group	Country
Anglian Water	100%	Anglian Water	UK
Northumbrian Water	100%	Suez-Lyonnaise	France
North West Water	100%	United Utilities	UK
Severn Trent Water	100%	Severn Trent	UK
Southern Water	100%	Scottish Power	UK (Scotland)
Thames Water	100%	RWE	Germany
Welsh Water	100%	Glas Cymru (non-profit)	UK
Wessex Water	100%	Azurix (Enron)	USA
Yorkshire Water	100%	Kelda	UK

**Figure 1:** England’s Private Water Companies. Retrieved from Dore et al (2004)



**Figure 2:** Top 10 countries by total installed capacity since 1945 (top) and 2003 (bottom). Taken from Drouiche et al. (2011).

**PepsiCo (top), Coca-Cola (middle), and SABMiller (bottom): reported (droplets) and adjusted for overall growth in volume of product sold (bottles)**



**Figure 3:** Water Efficiency vs Production Comparison for Coca Cola, Pepsi Co and SABMiller Taken from Mason (2013).