

Fresh Water Supply and Availability: Monitoring a developing crisis in Ghana

Recipients:

In order to tackle the issue of inadequate water supply a multi-sectorial approach that draws on the communal efforts on all institutions that handle the supplies or processing of freshwater in Ghana is required. Notable institutions that should be heavily involved are the Ghana Urban Water Company and Water Resource Commission.

Student Number: 1839792

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Figure 1 - Safe Water for Six Communities in Ghana (Rotary International, 2017)

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Executive summary:

In spite of the known abundance of fresh water that is accessible in Ghana, the production and utilisation of this resource, for both domestic and industrial means, is far below the optimum level (Owusu-Agyemang, 2007). Within the country there are still areas that experience inadequate supplies of fresh or sanitary water, especially due to the increased pollution of the sources and irregular weather patterns that promote severe drought and flooding. Specifically in Ghana, fresh (potable) water plays a large role, not only in the survival of its population but also in many industrial activities, including; hydropower generation, agricultural use, transport and mining. Continuous inadequate access to a sanitary, sufficient supply of potable water and a necessary volume for agricultural, domestic and industrial use is an ever-evolving crisis in the country. With a rapidly growing population, increasingly developing oil and gas industry, urbanisation of rural areas and irregular rainfall patterns due to climate change, this problem is heightened in this area of Western Africa. It is the aim of this brief to call for actions that can be taken immediately at both community and regional levels, as well as a number of initiatives that will help Ghana increase its levels of potable water available to its population and industry, aided by the appropriate national agencies. Within this brief, I will suggest ways to improve the access and sufficient use of potable water in the country. These policies include, long term monitoring of large bodies of water within specific regions using tried and tested technology, appropriate allocation of representatives on sanitary committees and the end of small-scale gold mining activities along the banks of estuaries and rivers that rapidly increase the pollution of these water sources.

Foundational science: Discussion and Analysis:

Of all renewable resources, water is the most basic requirement in the sustenance of all forms of life, not only for direct consumption, but also for food and energy production (Nsubuga et al, 2014). Even though 70% of the world's surface is covered with water, only roughly 2.5% of this is deemed as potable water, with most of this source stored in deep ground-water (International Atomic Energy Agency, 2011). In Ghana, the available surface water is contained within three river systems, the Volta (shared with 5 neighbouring countries), the South Western and smaller coastal rivers (Agyenim and Gupta, 2011). Whilst this surface water is used as the sole source of domestic water supply, it is heavily polluted from small-scale mining and agricultural activities, resulting in heavily compromised water quality. This not only increases the levels of water

vulnerability in the country but also results in large amounts of money being used to treat a small amount of water for domestic use (Duwiejuah et al, 2018). Water vulnerability is frequently estimated from the ratio of water demand and the availability of water in a region, with stress placed on the water supply when local demand exceeds the local availability (Wada, 2010). As a result of a high level of water vulnerability in Ghana, a lack of potable water, droughts and floods expose Ghana's population, more commonly women and children, to water borne diseases and also force relocation in some instances. As well as this threat to the large population, many areas of Ghana's economy require adequate supplies of potable water to generate profit, with agriculture being the 'backbone' of the economy (The World Bank, 2018). Sufficient freshwater supplies are fundamental to the survival of this sector, as the ever-growing population is in desperate need of an increase in food production, with 4% of the population being classified as malnourished (Coastal Resource Centre, 2013) (World Food Programme, 2019). In many localities of Ghana there continue to be fresh water supply deficits affecting large sections of the population, and this is increasingly seen in cases of potable water. The Resource Centre Network Ghana states that only 62% of the country's population last year had access to potable drinking water (2019). This large deficit in the potable water is being further worsened by the changing rainfall patterns that alter the local and regional supplies; these changes greatly alter the freshwater sources required to sustain the ecological and hydrological functioning of Ghana's estuaries, rivers and wetlands.

Assessment of Existing Governance:

Ghana has previously adopted a comprehensive water policy titled the 'Ghana National Water Policy' (GNWP), published in 2007, that called for the number of people without basic water needs to be halved by 2015 (Ministry of Water Resources, Works and Housing, 2007). At a global level, the policy was designed and drew inspiration from the Millennium Development Goals (MDGs), while at the slightly smaller national level it derives from the Growth and Poverty Reduction Strategy (GPRS); a series of two development frameworks designed to increase the welfare of Ghanaians between 2003 - 2009 (International Monetary Fund, 2012). At a more local and regional level, the African Water Vision 2025 underpinned the policy; a structure based on the shared vision for the sustainable use, distribution and management of the continents water resources (Monney and Ocloo, 2017). Undoubtedly, the policy is well drafted and addresses most of the major problems facing Ghana's water sector. Within this, the problems are correctly directed towards the three subsectors of their water industry; resource management, community sanitation and urban water supply (Water and Sanitation Program, 2011). This overall holistic approach resulted in widespread acceptance of the brief from many agencies and subsequently some effort went into implementing the strategies presented in this paper. One significant pitfall of the policy however is that it gives clear support of private sector participation in urban water supply, which is deemed necessary to improve access to water. The paper states that the private sector should be 'encouraged to participate in the share-holding of the management of Ghana Water company limited', therefore

introducing the increased privatisation of the urban water management and supply (Ministry of Water Resources, Works and Housing, 2007). Not only does this contradict the principle of human right to water, the first value of the 2007 water policy, but also could lead to the prioritisation of economic profit from fresh water supplies instead of the necessary focus being the wellbeing of the population (Ministry of Water Resources, Works and Housing, 2007). The Food and Agriculture Organisation of the UN (FAO) also argues against the privatisation of water supply and raises the issue that more affluent customers are favoured when the supply is privatised, therefore promoting inequalities in the consumption of the naturally occurring source (FAO, 1995). Moving forward with the hopes of success, amendments of this brief needs to reflect the current global and national development agenda, remove contradictions regarding privatisation and also include some Ghana-specific solutions to water pollution. The framework used for implementation in this policy fails to have any affect on the land management and mining sectors of the country, both of which are notorious contributors to water pollution. The neglect of these two areas will, as it has been shown, hinder the aim of this brief to half the amount of people without basic water needs as pollution reduces the amount of potable water available to the population. Furthermore timelines for the review of new agendas and necessary update of the policy are also absent and there are no subsequent indicators for monitoring the progress of the policy goals.

Governance recommendations:

When tackling a complex issue, such as fresh water supply, it is necessary to take a multi-sectoral approach that addresses all three areas of Ghana's water sector. It is for this reason that future governance recommendations should include not only nationally focused implementations but also community and regional level strategies.

At the smaller scale of communities and regions the following should be implemented:

- An association should be created to identify communities that may not have sufficient or sanitary access to water. Once identified these communities should be correctly educated on safe water harvesting methods. This education should also be incorporated into schools local to these areas to increase the next generation's knowledge.
- Long-term programmes where the quality of water present in the rivers, wetlands and estuaries is systematically monitored should be introduced. This can be achieved through collaboration with the 'Council for Scientific and Industrial Research' (CSIR) Water Research Institute and volunteers from the local educational centres. This is important, as when one is managing fresh water supplies, wastewater and water quality are fundamental tools in the monitoring of the fresh water resource as they

provide chemical and biological status of the resource (Kyoto University, 2015). For example, in China, the application of remote-sensing techniques for water quality assessments are becoming increasingly popular and it is due to this technique that China has been said to make notable progress in the accurate evaluation of its fresh water sources (Wang, 2018).

- Authorities with jurisdiction over important watershed areas and communal river basins should be represented on sanitary committees. Through this role they should be encouraged to peruse and adapt their roles as custodians of the riverine systems.

Nationally the following should be implemented:

- In December 2018 the Ghanaian government lifted a two-year ban on the small-scale mining activities that were taking place on shorelines and banks. The ban was originally implemented to catch those who were illegally mining and polluting and it was noted that this lack of mining was having, a small, but positive effect on surrounding water sources. After the implementation of the ban in January 2017, the government decided to lift it in the December of 2018, as they now believe they have efficiently educated those who wish to mine (on a large scale) in more environmentally sustainable methods (Yeboah, 2018). After the lifting of this productive ban, it is this brief's call that the ban is reintroduced. The Regional Coordination Counsel should campaign for the end of small mining activities at the side of estuaries and rivers, as these activities lead to an increased level of water pollution in these areas. Collaboration with national security agencies may be necessary if these small illegal behaviours are to be brought under control. This may also be supported by the national press reporting on the prosecution of those who continue to illegally mine, as it would act as a sufficient deterrent and educated those who do not understand the harms of this activity.

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