Hɛn Mpoano Policy Brief Series

Fresh Water Supply and Distribution: a Developing Crisis in the Western Region

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Coastal Resources Center, University of Rhode Island

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For more information on the Integrated Coastal and Fisheries Governance project, contact: Coastal Resources Center, University of Rhode Island, Narragansett Bay Campus, 220 South Ferry Road, Narragansett, Rhode Island 02882, USA. Brian Crawford, Director International Programs at brian@crc.uri.edu; Tel: 401-874-6224; Fax: 401-874-6920.

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Issue Brief 4
February 2013

Hen Mpoano

Our coast
Our future !

Summary

This is the fifth in a series of Hen Mpoano Issue Briefs that seek to establish and sustain an informed dialogue on issues concerning coastal and marine governance in the Western Region. Inadequate access to freshwater of good quality and sufficient quantity for domestic, industrial and agricultural uses is an evolving crisis in Ghana. In the Western Region, the situation is made more acute by a rapidly expanding population, the demands produced by new forms of development associated with the exploitation of the region's oil and gas resources and the increasing temperatures and irregular rainfall patterns associated with climate change. This Brief calls for actions that can be taken immediately at the District and community levels and a number of longer term initiatives that could be instigated by the Western Region Coordinating Council in collaboration with the appropriate national agencies. Strong engagement with the business community is essential to heading off conditions that will damage their interests and create growing inequality in how limited water supplies are allocated.

The Supply and Distribution of Freshwater Is an Important National Issue

Rivers, streams, lakes, groundwater, wetlands and their watersheds will remain the primary sources of freshwater supply. Water from these sources are treated and distributed by the Ghana Water Company. The authority for licensing and regulating the abstraction of water from these sources is vested in the Water Resources Commission (WRC) while the Environmental Protection Agency (EPA) is mandated to manage and protect these primary sources of water. However, in many localities of Ghana, there continues to be freshwater supply deficits affecting large sections of the population, especially for potable water. Recent estimates from the Ministry of Water Resources, Works and Housing indicate that 57% of the country's rural and small town population have access to potable water, while access in urban areas is 59%. These figures indicate a supply deficit of 43% and 41% for the rural and urban areas respectively. This deficit in freshwater supply is being worsened by changing rainfall patterns that alter the freshwater sources required to sustain the hydrological and ecological functioning of rivers, estuaries and wetlands.

In 2007, Ghana adopted a comprehensive water policy that calls for reducing by half the proportion of the population without access to basic water needs by 2015. At the same time, there are multiple demands for water from different sectors of the economy. Agriculture is the backbone of Ghana's economy and adequate freshwater supplies are essential if this sector is to continue to produce food for a growing population and remain the main source of income and livelihoods for rural populations. Freshwater supplies for irrigation will likely increase in response to the need to grow more food. The expansion of urban populations will also increase the demand for potable water for domestic needs as will the expansion in industrial operations.

Constraints to Water Supply in the Western Region

In the coastal districts of the Western Region, water supply systems for domestic consumption are increasingly stressed by a rapidly growing population, the construction and operation of large new industrial facilities spurred by the production of oil and gas and the associated hospitality and tourism industry. As demand for water increases, poor households face challenges in accessing water for their domestic needs. As the overarching planning authorities in their areas of jurisdiction, district assemblies and municipal authorities need to increase their investments in groundwater abstraction and thereby increase access to potable water in water-stressed communities.

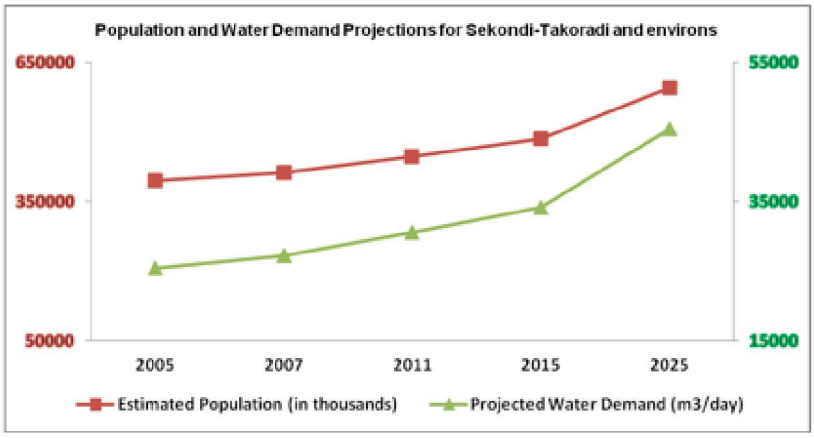
A Focus on Sekondi-Takoradi Metropolitan Area and its Environs

There are two main sources of water supply to the Sekondi-Takoradi Metropolitan Area (STMA) and nearby towns in the Shama and Ahanta West Districts. These water treatment plants are the Daboase Headworks which abstract water from the Pra River and the Inchaban Headworks which treats raw water taken from a dam on the Anankwar River. The Inchaban facility was constructed in 1928 with an installed capacity of 4 million gallons/ day. Today, average water supply from this facility is 2 million gallons/ day. During most periods in the year, this reduces to approximately 1 million gallons/day. The Daboase facility on the other hand, was constructed in 1969 with an installed capacity of 6 million gallons/day but currently produces at 4.2 million gallons/day on the average. Available statistics indicate that water demand in the STMA and its nearby towns is 6.7 million gallons/day. This is projected to reach 7.5 million gallons/per day in 2015 and over 10 million gallons/day in 2025. As shown in the figure below, water demand in the STMA and surrounding towns will witness a sharp increase by 2015 as the population grows. Analysis of the demand and production capacities reveals that the current demand (6.7 million gallons/ day) for water exceeds the combined production (1 + 4.2 million gallons/ day) from the two water treatment facilities. These demand and supply estimates suggest a looming water crisis in the STMA and its environs if nothing is done immediately to improve the supply and distribution situation. This is because as water demand grows, the current supply shortfall of 1.5 million gallons/day will increase to 2.3 millon gallons/ day by 2015 and further rise to 4.8 million gallons/day by 2025. Meanwhile, this projected shortfall does not take into account anticipated demand that will result from infrastructure development associated with oil and gas production. Consequently, this supply shortfall will triple if rise in population and water demands of new industrial and residential facilities associated with oil and gas development are taken into consideration. Market mechanisms such as upfront payments by new large scale consumers of water should be required to meet the costs of expanding water infrastructure. For instance in STMA, could large infrastructure projects such as port facilities, energy complexes and that to be funded by the Chinese loan facility invest upfront in the water supply systems upon which they will be dependent?

Population and Water Demand Projections for Sekondi-Takoradi and Environs

Many factors account for the water supply shortfall in STMA and its environs. First, the Inchaban reservoir, dam, treatment facilities and pumping equipment have not seen significant upgrading since their construction 85 years ago. This partly accounts for the operation of the facility below installed capacity. The water supply infrastructure must keep pace with new forms of development. The quality of water from the Pra River is degraded on daily basis by illegal gold mining operations, locally known as galamsey. This activity results in mercury pollution and sedimentation due to disturbance of the river bed. It is worth noting that the Inchaban and Daboase water treatment facilities have not been designed to remove mercury and other heavy metals from the water supply. Besides, the presence of high sediment loads in the water disrupts the normal functioning of the treatment facility. Together, these pose additional health risks to the populations that depend on these sources for their potable water supply.

While the STMA and major towns in Shama and Ahanta West districts obtain piped-water supply from the Daboase and Inchaban facilities, communities in the Jomoro, Ellembelle and Nzema East districts are mostly served by bore holes and hand-dug wells and through the small town water supply systems. Consequently, most communities in these areas lack access to piped water at the household level. It is therefore common to see lines of women and children carrying water from a borehole or stream distant from their dwelling in these areas.

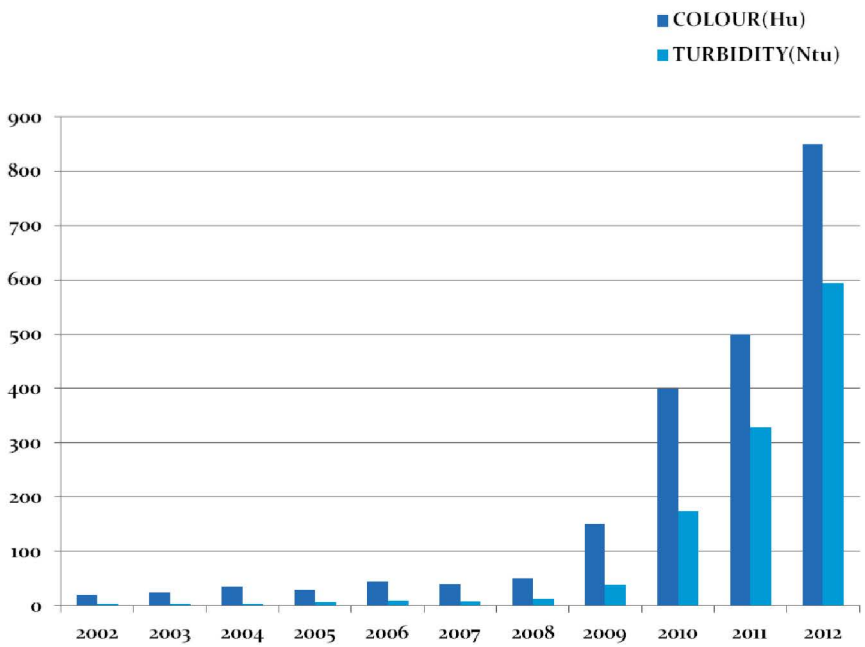


Emerging demands for freshwater

As noted above, current estimates of water demand do not take into account much of the anticipated demand by the oil and gas related activities, infrastructural and housing development. Yet the Western Region, particularly its coastal zone, is witnessing unprecedented development due to the oil and gas boom. There are plans, for example, by the Korean Development Agency to build thousands of residential housing units in the Ahanta West district. Also the South African Kings Town development project will bring additional housing units in STMA. The projected water demand for these projects is over 7 million gallons/day. The Volta River Authority is expanding capacity in their third phase of operation of the Takoradi Thermal Plant. This facility will require an additional 5.7 million gallons/day. Thanks to the 3 billion Chinese loan, the STMA will witness the operation of aluminum smelters and other related infrastructural investments. How is water going to be allocated among all these potentially huge consumers, given the existing water supply situation?

Box 1:
Yearly polution indication in the Pra river.

Yearly polution indication in the Pra river.



A simple comparison of price paid for water

When water supplies are abundant, the amount paid by individuals per bucket (equivalent of 0.02 cubic metres) in the urban areas of STMA for instance, is Ghc 0.10p. For the poor consumers, the additional cost of drudgery has to be incurred through trekking several kilometers to obtain a bucket of water, particularly during periods of shortage. The poor pay many times the amount the rich people pay for water in terms of the unit rate and the total cost because they buy from water vendors whilst rich people pay less because they have pipes connected directly to their homes. The situation of poor consumers is even worsened by the increasing public outcry regarding the poor quality of pipe-borne water. This has shifted attention to water sachets as the main source of drinking water. At Ghc 0.10p for each water sachet, people are paying as much as Ghc 200 for a cubic metre of potable water. This situation in STMA is similar to that in other urban centers in the Western Region and for that matter, Accra.

A way forward

The complex nature of the issue of water supply requires that a multi-sectoral approach that draws on the efforts of all water related institutions be applied to address the issues. This should involve governmental institutions, notably the Ghana Urban Water Company, Environmental Protection Agency, Water Resources Commission, civil society and private sector representatives working in close collaboration to tackle critical watershed issues having implications for the maintenance of hydrological services for downstream supply and distribution of water. Efforts at the district level should nest into the regional and national scales.
At the scale of the western region, actions are needed that will contribute to reducing the threats of a crisis brought by inadequate water supplies and an inequitable water distribution system.

1. The Regional Coordinating Council should launch a campaign designed to reduce and ultimately eliminate galamsey activities at all costs. Collaboration with national security agencies may be required if these illegal practices are to be brought under control.

2. Diversity of legislations including the Water Resources Commission Act 1996 (Act 522) and other relevant laws for punishing galamsey operations in rivers should be integrated and applied by prosecutors. Using such an approach will ensure that fines are increased from a single Ghc300 fine for galamsey activities in rivers to sanctions that constitute a significant deterent. Sanctions should be graduated to severely punish repeat offenders.

3. The press should report on the prosecution of galamsey operators and those backing their operations financially.

4. The RCC, in consultation with the WRC and the proposed Western Corridor Development Authority, should establish a Pra River Management Board and support studies that project freshwater supply and demand in the Western region. A Pra River Authority could develop and apply suitable fees for water that differentiate between large industrial consumers, residential and commercial areas with piped water and poor communities requiring locally accessible freshwater at a reasonable cost. It could also propose scenarios for up-front investment in water supply infrastructure for large scale projects since securing an adequate supply of freshwater will require upfront investments in upgrading water infrastructure and watershed protection. For instance, such investments should support development of the proposed 22 million gallons/day Water Treatment Plant at Esiama to serve the oil enclave.

At the scale of districts and communities, the following actions should be taken as additional sources of funding become available;

5. Critical watersheds shared by adjoining districts should be mapped and the subject of collaborative planning and management.

6. Assemblies should identify water stressed communities under their jurisdiction and design programmes for providing boreholes and education on water harvesting methods.

7. Positive management actions by District Assemblies could be rewarded through performance-based assessments such as the Functional Organisational Assessment Tool (FOAT) or urban development grants.

8. Traditional authorities with jurisdiction over critical watershed areas and river basins should be represented on watershed management committees and encouraged to play their role as the custodians of riverine systems.

9. Long-term programmes should be implemented to systematically monitor water quality in estuaries, rivers and wetlands and activities that reduce the supply and quality of freshwater. This could be done in collaboration with CSIR Water Research Institute and the Universities with support from local volunteers including school children.

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Comments are welcome:
send to Program Director, CRC-Ghana, Kofi Agbogah,
Email: kofi.agbogah@gmail.com

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