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Water security planning (WSP) for sustainable water resources management in West Africa

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This briefing paper describes the processes, lessons and challenges in developing a Water Security Plan (WSP) under WaterAid Securing Water Resources Approach (SWRA) initiative. The WSP provides framework for achieving sustainable access to water for multiple use while maintaining healthy and diverse ecosystems for communities in Bongo District by 2022. This plan was developed through participatory stakeholder involvement. The vision of the plan is to achieve sustainable access to water for the multiple use by the people of of Bongo District by 2022. The vision of the plan is informed by an analysis of the current and emerging challenges of water resources management. The analysis unearthed the strength and challenges of water resources management in the district and proposed actions supported by investment plan for securing water resources for multiple use. The plan addresses the challenges of water quality, water infrastructure, and accountability among others.

Background

Water is a shared resource, often for competing purposes such as for basic human needs including sanitation and hygiene, food production, energy production, industrial production and maintaining ecosystems. A central challenge for sustainable development is how to balance the many competing uses and users of water, to ensure the needs of all are met while maintaining healthy and diverse ecosystems (Van Beek and Arriens, 2014).

Currently, many of the world water systems are faced with crisis. Increasing demand, worsening pollution and extreme climatic events have placed the security of water systems and resources at significant risk (Magnus B. et al, 2015). The Government of Ghana recognises access to safe drinking water as a human right and essential to promoting human dignity and health by signing up to key international treaties and commitments such as the Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs) and establishing a number of domestic level policies. Over the past decades, significant progress has been made to raise the proportion of the population with access to improved water services in the country with 78% of the population having at least basic service level (WHO/UNICEF JMP, 2017). However, little attention has been paid to protecting the resource base upon which water abstraction facilities depend. As pressure and demand on water increase, the need to find new and innovative approaches to manage the resource becomes more and more apparent and urgent.

Indeed, all water uses have negative and positive impacts on one another. This is because the natural water resource systems are interconnected, particularly at the catchment level (WaterAid Water Security Framework, 2012). Therefore, to ensure equitable and efficient use of water, it is necessary to consider all the different uses of water together, rather than in isolation. This calls for a holistic and participatory planning approach to water security to address water systems and water resource sustainability, and water quality. This provides an opportunity for dealing with water security issues across sectors and stakeholders at all levels to promote joint accountability, functional coordination and collective actions.

Rationale

WaterAid Ghana, with the support of WaterAid West Africa Regional Learning Centre for Water Resource Management (RLC-WRM), launched an initiative in 2017 to support the Bawku West and Bongo District Assemblies of the Upper East Region of Ghana to develop Water Security Plans. This initiative as well as the processes involved, aim to strengthen the capacity of the Assemblies to optimize water resource allocation for multiple use, build robust and climate resilient water systems, and enhance community-based adaptation and resilience.

WaterAid definition of water security

WaterAid defines Water security as reliable access to water of sufficient quantity and quality for basic human needs, small-scale livelihoods and local ecosystem services, coupled with a well-managed risk of water-related disasters. WaterAid's WASH programming and advocacy aim to achieve water security for communities.

(WaterAid 2012)

Methodology

A participatory approach was used to facilitate the development of the Water Security Plans (WSPs). The Plan was developed by a team of water sector experts from selected agencies and departments such as Water Resources Commission (WRC), Community Water and Sanitation Agency (CWSA), Meteorological Service Department, Environmental Protection Agency (EPA), and the Department of Agriculture. It also included the District Engineer, Environmental Health Officers, Community Development Officer, Budget Officer, Water and Sanitation Leader of the District and four Civil Society Organizations (CSOs) operating in the district. The selection of these stakeholders follows a rigorous mapping exercise to assess the stakeholder's interest in WSP, their level of involvement, the benefits they might derive from WSP, access to information on water management planning, and influence on water resources management among others. The agencies that were rated high on the basis of these criteria were selected. Consultation meetings were held with the individual stakeholders to secure their buy-in. This process brought together stakeholders on an equal footing around the challenges of sustainable water resource management. It also allowed for the sharing of information, perspectives, expertise, experiences and access to relevant data for the WSP development.

The processes involved initial assessment including a desk study of the water security situation, water resources management and challenges; stakeholder orientation; formation of WSP development team; data collection; data analysis; WSP validation; and WSP presentation. Structured questionnaires with close-ended questions were used to elicit the relevant information from the respondents using the mWater mobile app.

Based on data obtained from the district, communities were categorised into:

- least served with water;
- flood prone;
- drought prone; and
- Served with standpipes or water system.

Primary and secondary data were collected on the status of water security in the district. The primary data were qualitative in nature and sought to elicit the perception of household heads on the current water security status. The data collected was exported from the mWater interface onto spread sheets in Microsoft Excel for analysis. The results were presented in forms such as tables and graphs. The data was further analysed and grouped under various topics corresponding to thematic or focal areas for the WSP development. The secondary data were scientific indicator-based data that enabled comparison with and validation of the primary data.

In total, 30% of the communities in each category were randomly sampled for data collection. In total, 88 communities were selected. Within these, purposive sampling was used to identify household heads based on their socio-economic groupings such as livestock farmers, fishermen, crop farmers, basket weavers, shea-butter producers and soap makers. In all, 1,522 households were sampled.

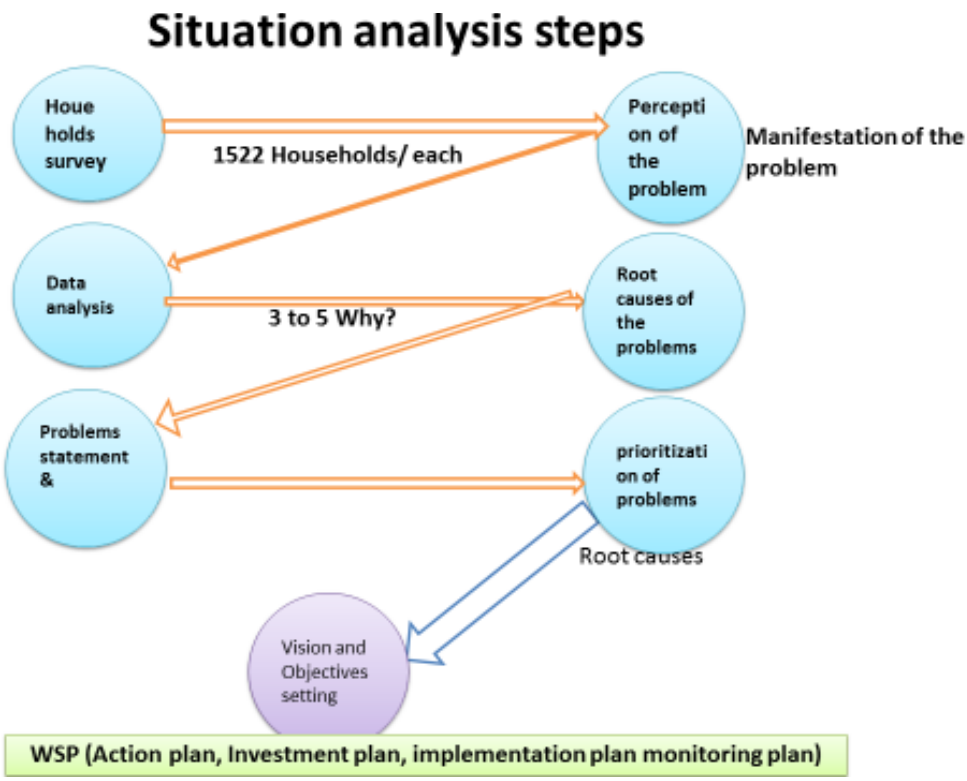

Figure 1. Situation analysis

Source: WaterAid Ghana, 2017

Results

Water security status in the Bongo District

Rivers, streams, and dams are the main sources of surface water in Bongo District Annual actual evapo-transpiration (AET) is 83.6%, annual recharge to groundwater is 6.6% while surface runoff is 9.8% per year (White Volta Basin IWRM Plan, 2008). Sustainable groundwater yield is 15,768 m3 per year (Department of Agriculture, Bongo, 2016). The district has 12 dams (5 require rehabilitation), 12 dug outs (4 require rehabilitation) for irrigation (crop and animal water) serving 93.4% of the population who are into agriculture. With the limited access to water and frequent drying up of water bodies, 92% households surveyed have experienced water related-conflicts.

On safe water for meeting basic human needs, 90% of the households surveyed have no information on water safety (quality, quantity, storage and transportation). This leaves the districts with a wide gap in terms of information needed by households to safely manage their water supply.

With respect to environmental management, 95% of households perceived that quality water is essential for environmental protection, but water sources in the district are frequently polluted through activities including:

- illegal mining,
- wrong use of chemicals for agriculture, and
- littering of polythene and other plastic materials (Bongo District Assembly WASH plan, 2016).

Water safety policy for environmental preservation and management is weak and communities are not sensitized on the Integrated Water Resources Management (IWRM) policy adopted by the government.

On water governance, 48% of households surveyed indicated they have never been invited to participate in decision making related to government plans and programmes for improving water management. There is therefore weak engagement between citizens and duty bearers.

With respect to the changing climate based on observation and community perception, the Bongo District suffers from:

- Seasonal changes in the water table leading to water stress;
- Unpredictable and erratic rainfall pattern;
- High temperatures resulting in frequent drying up of water bodies; and
- Frequent drought and flooding leading to disasters (ibid, 2016).

However, data on climate change and the assessment of its impact on the people and their livelihoods is non-existent.

Outcome

Working together, the Water Security Plan Development Team jointly agreed on a five-year plan built on a shared vision and associated objectives along with action plans, investment plans and risk management plans. The vision, goals and objectives of the plan were informed by an analysis of the current and emerging challenges of the water resource management based on primary (household level) and secondary data. The current water security situation was analysed along five main thematic areas. These are:

1. Water for domestic use
2. Water for livelihoods
3. Water for environmental protection
4. Water governance
5. Climate change.

Photograph 1. Water security plan development team

The analysis unearthed the strengths and challenges of water resource management in the districts and proposed several actions for securing water resources for multiple use. For example, 53% of the people surveyed perceive that water-related conflicts could be reduced by improving access to water. Another 87% of the households surveyed perceived that quality water is essential for environmental protection and management. The Bongo district is challenged with fluoride contamination of most of its water sources. WaterAid Ghana in 2017 has had to cap 40% of boreholes drilled due high fluoride content (WaterAid Ghana, 2017). Yet, 70% of households surveyed perceived ground water to be of good quality.

The stakeholder analysis revealed that the number of agencies with clear mandate on water security are limited. Most development organisations in the water sector focus exclusively on water service delivery for domestic consumption to the neglect of efforts to sustain the resource based.

Implementation of the Water Security Plan is to be led by an implementation team with varied backgrounds to oversee and coordinate activities to implement the plan and report to the District Planning and Coordinating Unit (DCPU). The monitoring plan identifies a set of indicators to track progress of the implementation of the WSP by the District Assembly and partners. A quarterly review has been scheduled to allow the teams to

reflect on the performance of the various actors towards the achievement of the objectives of the plan. Specifically, the WSP addresses the following issues:

- Water quality
- Access to water infrastructure
- Water for multiple use
- Water for ecosystem preservation
- Water resources management
- Accountability
- Drought, floods and disasters.

Perspectives of stakeholders

'...Water security plan is the foundation step to water facility sustainability. This takes water management beyond water facility to include measures to secure the resource base', Ebenezer Asomaning, Water and Sanitation Engineer, Bongo District.

'...Water is important for the realization of the mission of the Bawku West Assembly. We shall incorporate the water security plan into our medium-term development plans. In addition, this plan aligns very well with the Government policy of one village one dam. It will support the implementation of the policy', Musah Paul, District Engineer, Bawku West District.

'... For the first time we have all the relevant stakeholders at the sub-national level talking about water security. This is good development because water resources management challenges occur at different levels. Local challenges and basin challenges need to be addressed in parallel', Andrew Asaviansa, Assistant Basin Officer, White Volta Basin.

What did we learn?

Insights from the stakeholder mapping and engagements, revealed weak coordination, joint accountability, and collective actions among the agencies involved in WRM. This limits the potential for concerted decision-making to sustainably manage water resources.

The participatory approach created an inclusive and transparent stakeholder platform for joint planning and action to address the challenges of water resources management.

Collaboration among the different stakeholders enabled well-informed decisions for collective action to come to light. It also allowed for data pertaining to water resources management to be made available for stakeholders to gain new insight.

Despite the policy intent and efforts towards IWRM, field survey revealed weak mechanisms for connecting with traditional authorities to protect water resources particularly wetlands at the community level. This has resulted in a situation where wetlands are fast becoming built up areas for human settlement.

Data on water availability (rainfall, surface and groundwater) and water uses at the district level is fragmented and incomplete. Where it is available, initiatives to collect data are driven by donor funded projects and stopped when funding ended.

Recommendations

- Water security planning should be made an integral component of the District Assembly Medium Term Development Plan given the centrality of water resources to the realisation of the plans.
- There is urgent need for elaborate mechanisms for involving traditional authorities in IWRM to enhance the protection and management of water bodies.
- The District should establish a unit for water resources monitoring with a clear mandate and resources to safeguard water resources in the district.
- The District should champion this process and lead the way in bringing together all other stakeholders to discuss and catalyze collective action to address water security challenges.
- The implementation of the WSP should be led by a relevant stakeholder group including interested civil society organizations. The stakeholder group should include women group representatives to ensure women concerns are sufficiently catered for in the implementation of the plan. This engenders joint accountability.
- The WSP should not be a standalone plan. Rather, it should be incorporated into the overall development agenda of the local government area.

Conclusion

Water resources scarcity and water stress are real. Taking prudent measures to manage water resources must be in integral part of WASH sector investments. Cutting across a wide range of sectors and actors, water security planning is a foundation steps to achieving sustainability and resilience in WASH services delivery. The process brings together duty-bearers and right-holders to brainstorm and agree on actions to safe guard water security. The range of tools required to address water resources security extends from analysis to participatory processes.

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Note

SWRA is a set of activities and relationships designed to improve local management of water resources, and so enhance resilience to threats like increasing demand, environmental degradation, and climate variability (WaterAid, 2016)

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