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Akosombo Dam Spillage: A nightmare that needs no repeat but restrategizing

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Abstract

Ghana's largest source of hydroelectric power supply comes from the Akosombo Dam in the Volta Region. Neighbouring countries such as Benin and Togo have equally benefited from the power supplies from this dam. Unfortunately, due to climate change and other domestic factors, it is becoming challenging for managers of the dam to accurately predict the water levels and the impact of spillages. Although the most recent spillage was underestimated, it has been very destructive, with devastating consequences, leading to the loss of belongings and livelihoods as communities were totally swept away. Using a team of experts and a desktop review approach, this policy brief investigates the effects and suggests relevant policy directions for addressing them.

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Introduction

On September 15, 2023, the Volta River Authority initiated a controlled dam spillage as a preventative measure to avoid water levels reaching a critical point and jeopardizing Ghana's oldest and largest hydropower facility. While this exercise has been deemed a "necessary evil" by many, it effectively safeguarded the dam from potential damage. Regrettably, it also resulted in substantial disruptions in livelihoods, displacements, and property losses. This paper shares perspectives on impacts, prescribes solutions, and discusses the way forward for Ghana.

Gender and vulnerable groups

Dams are crucial for water resource management, the generation of energy, and the mitigation of floods. However, it is important to acknowledge that occurrences like the Akosombo Dam spillage may carry adverse social, economic, and environmental repercussions, particularly impacting women and other marginalized communities. Hamidazada et al. (2019) identified in their study that flood disasters tend to inflict a disproportionately traumatic toll on vulnerable demographic groups, specifically children, women, and the elderly. Armah et al. (2010) found that the release of excess water from the Bagre Dam in Burkina Faso had a disproportionate impact on specific groups, such as childless widows, the elderly, and children, who were more vulnerable to experiencing harm, losses, and distress in Northern Ghana. This finding draws parallels to the spillage incident of the Akosombo Dam. The vulnerability to floods is connected to gender, with women often bearing a greater burden of familial caregiving responsibilities due to their roles (Walker & Burningham, 2011; Naz & Sadiq, 2021), especially in societies such as Ghana where these responsibilities are traditional. Female-headed households, according to Gaisie et al. (2022), encounter heightened challenges in managing and recuperating from flood events due to entrenched gender norms, bigger household sizes, caregiving roles, fewer employment opportunities, and limited resource accessibility. Efforts aimed at mitigating floods should integrate gender-inclusive strategies within flood preparedness initiatives, taking into account the distinct needs and susceptibilities of both women and men.

Livelihood, poverty and development

The spillage of the Akosombo dam has had a series of devastating effects on the lives of residents in the affected areas. The livelihoods of most of these residents have been destroyed. Their businesses and sources of daily income have been washed down the drain. The majority of the residents are farmers who engage in fish farming and crop production. Studies from some of the community members who have

experienced previous spillage indicate that about two-thirds of the residents had their livelihoods worsened after the construction of the dam due to the spillage (Armah et. al., 2020). Most people had their livelihoods displaced, with the greatest hit being the fish farmers. The 2023 spillage has been said to be severe since the population within the area has increased over the years. It is reported that about 26,000 people have been displaced and are still counting. These people have lost their jobs, become worse off, and are surviving at the mercy of others. Khayyam (2020) asserts that the displaced livelihoods of these residents tend to deepen their poverty situation, impede the development of their communities and the country at large, and require critical attention.

Pollution and public health

The flooding due to the spillage of the dam poses significant public health concerns about the health and wellbeing of inhabitants of flooded and displaced communities. Floods displace pollutants from agricultural activities, including fertilisers, animal waste, weedicides, and pesticides, which infiltrate drinking water sources such as rivers, streams, and wells, consequently resulting in contamination. Individuals who consume water from these polluted sources may experience poor health due to the elevated levels of phosphorus and nitrogen in pollutants originating from agricultural activities. High consumption of nitrogen is linked to an increased risk of colorectal cancer (Ward et al., 2018), thyroid disease (WHO, 2016), and methemoglobinemia (Brender, 2020). Also, floods have the potential to transport both solid and liquid waste (such as faecal matter) originating from households across different communities, posing a risk of contaminating drinking water supplies and compromising human health. Studies have linked the ingestion of faecal matter by humans and animals with various illnesses, including infections, cholera, hepatitis E, typhoid, dysentery, and diarrhoea (Gupta & Agarwala, 2018; Mensah et al., 2018; Majorin et al., 2019; Eurien et al., 2021). Interventions to mitigate the public health implications arising from the flooding should include the provision of portable drinking water for flooded and displaced individuals to reduce their risk of waterborne diseases, including but not limited to diarrhoea, cholera, and dysentery.

Farming activities and food security

Farming activities along river basins have been noted to contribute to food security due to all-year-round access to irrigation sources (Passarelli et al., 2018). The Volta Basin contributes significantly to food security in Ghana, as almost all rice cultivation in Ghana is carried out within the Volta Basin catchment. Based on a 3-year average data spanning from 2016 to 2018, as reported by the Ministry of Food and Agriculture (2019), the Volta Region

maintains its prominent position as the primary rice (paddy) producing region in Ghana. It accounts for approximately 37 percent of the country's total production. Communities around the Akosombo Dam are noted for the cultivation of rice,) maize, cassava, and bananas. There is also a great level of commercial fish farming activity in the Akosombo Dam enclave (Ragasa et al., 2020). With the spillage of the Akosombo Dam, several farms are flooded, and crops will be lost. Several fish farmers have also lost their cages of fish. While these have a direct financial effect on the farmers, the implications for food security are enormous. The loss of food will directly affect food availability. Further, the loss of food will result in food supply shortages, and this will result in high food prices as demand exceeds supply. This will affect access to food. Affected farmers in these communities are less likely to take up farming in the future even when compensated, and this will affect food stability. Beyond compensation, farmers need counselling and education on farm insurance to ensure they remain in the business of farming.

Education and awareness

A dam's limited capacity has serious repercussions. That is, downstream populations, infrastructure, and the ecosystem are at risk of flooding (Castro and Rifai, 2022; Ntiamoah-Badu et al., 2017). Additionally, a spilled dam may sustain physical harm, which could jeopardize the dam's structural integrity (Sun et al., 2022). Efforts must be made to prevent dam spillage through careful monitoring of water levels and controlled releases when necessary (Richter and Thomas, 2007). In eventuality, education and awareness creation about the spillage of the dam are crucial for the safety and well-being of communities living downstream, especially in the event of the spillage of Akosombo Dam (Ntiamoah-Badu et al. 2017). There are several mediums to adopt in this education and awareness creation, as done all over the world. Development of brochures, posters and educational materials in multiple languages spoken in the affected communities that vividly explain the potential risks associated with the Akosombo Dam and what to do in the event of a spillage or emergency as it has occurred in recent times. Another equally important medium is to organize workshops and seminars in the communities downstream of the dam to educate residents about the dam's operations and the potential risks and dangers involved. Partner with local radio and television stations to broadcast public service announcements about dam safety and spillage risks, local schools and universities to incorporate information about the dam and spillage risks into their curricula. Hold regular community meetings to discuss dam safety, emergency response plans, and evacuation procedures. Create a

website and use social media platforms to disseminate information.

Interventions and Policy Direction

Since the inauguration of Ghana's largest hydroelectric dam, near a Diamond Jubilee ago, with its associated intermittent spillage management methods, it is unclear what the public policy and control mechanisms that guides these processes are. The most recent devastating impact and lack of responsibility calls for a clear public policy to aid the management and possible impacts of the process. To achieve this, collaboration is vital among management entities, including the Volta River Authority (VRA), National Disaster Management Organization (NADMO) under the Ministry of the Interior, Ministry of Sanitation and Water Resources (MSWR), Water Resources Commission (WRC), Ghana Water Company Limited (GWCL), Ministry of Local Government and Rural Development (MLGRD), Media outlets, as well as other private and public sectors stakeholders. Their concerted efforts must be directed towards delivering aid that genuinely addresses the needs of affected communities, rather than serving political interests. It is imperative that these organizations, along with government authorities, employ real-time data to target the root causes of disasters and restrategise to prevent recurring scenarios. Key necessities for women, children, "physically unabled" and other vulnerable populations encompass warm meals, blankets, sanitary products, mosquito nets, water purification, and suitable shelter, such as tents placed on elevated ground. To achieve sustainable solutions, government institutions must prioritise robust spatial planning in the impacted regions. A collective effort is needed to reconfigure these areas, adapting them to the new realities brought about by the effects of climate change. It's essential to consider a spatial reorganisation that can divert a portion of the water spillage for both commercial and domestic purposes. As the challenges of development evolve over time, our spatial infrastructure should be made flexible and prepared to address the global issues posed by climate change.

In conclusion, the recent Akosombo Dam spillage was indeed a nightmare for many, disrupting lives and property in its wake. While it served its primary purpose in safeguarding the dam and preventing a potential catastrophe, it also revealed the urgent need for a comprehensive re-evaluation of our strategies. As we reflect on the damage caused and the lives disrupted, it is imperative that we embrace this opportunity to learn from our experiences and develop better, more sustainable methods for safeguarding our vital infrastructure. We must prioritize the protection of our communities while ensuring that we do not compromise the lifelines of our nation. It is through this combination of vigilance, strategic planning, and collective efforts that we can

transform this nightmarish episode into a catalyst for a more secure and resilient future.

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