



Climate Change: Ghana Uses Solar Power Plant to Manage Drought Threatened Bui Hydroelectric Dam

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- Implementation of hydro solar hybridization.
- Tributaries that flow in the dam drying-up up north.
- Solar power plant- the game changer.

Story by Dominic Hlordzi.

Strategic adaptation to climate induce challenges is the path many economies across the globe are traversing.

Weather patterns are changing and unreliable. As a result, activities or facilities that depend on rain fall must adjust or be forced to collapse.

Reliable electricity supply is key to industrialisation and overall development of any nation.

Ghana had difficulties with power generation and efforts were made to increase generation. In the last decade, thermal power plants and additional hydro-the Bui Hydroelectric Dam were brought on board to augment power supply to end power outages, “dumsor” and for export into the West African power market.

It was not envisaged that the Bui Dam will one day seek to venture into other forms of renewable sources of energy to stay in business.

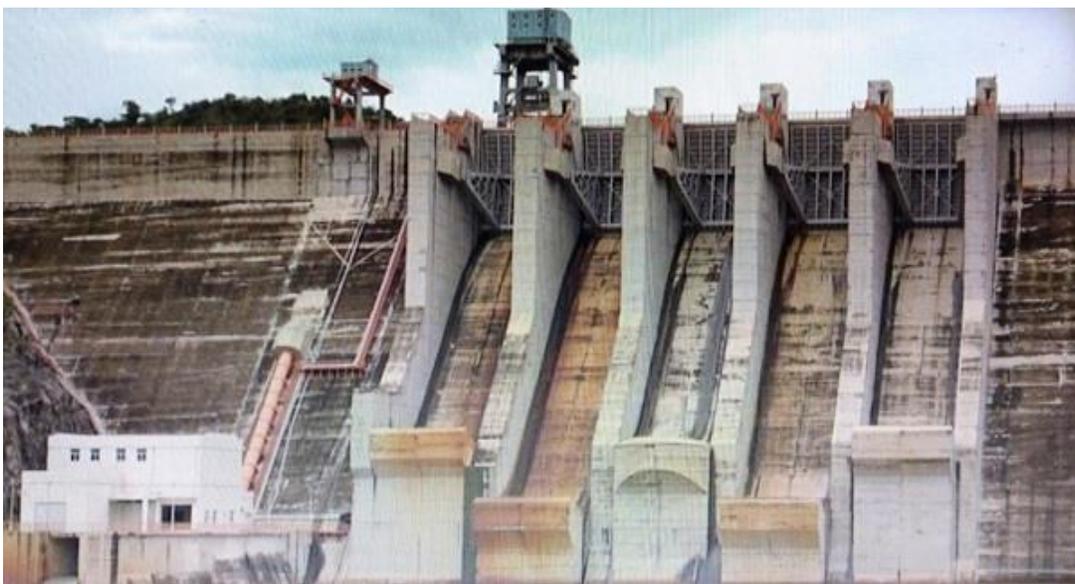


What is the issue? Inflow of water into the dam's reservoir has been erratic.

According to the Director of Power at the Energy Ministry, Mr. Solomon Adjetey, Bui Hydroelectric Dam cannot operate "continuously" throughout the year because the water in the reservoir will run out within three to four month of non-stop operation.

"Basically, we are using the solar to manage the reservoir"- Deputy CEO, Bui Power Authority, Mr. Anthony Osafo-Kissi.

The main source of water for the Dam comes from the Black Volta and the Black Volta takes its head from Mali, Burkina Faso through Cote d'Ivoire to Ghana.



Mr. Osafo-Kissi laments, “if the water in the river in Burkina Faso dries up, then basically we don’t have any flow into Bui Dam in Ghana.”

He explained that even though there are different rainfall patterns and seasons in Ghana where the reservoir gets some volumes of water, the dam relies on the inflows from neighbouring countries.

“With climate change, now we are not seeing it very significantly, but I am sure in the future we are going to experience the climate change severely in the sense that the normal rainfall pattern is going to change completely,” Mr. Osafo-Kissi, stated.

The Bui Hydroelectric Dam located on the Black Volta River serves as the boundary between Savannah and Bono regions.

It was commissioned on December 19, 2013. The strategic national asset constructed by Sinohydro Corporation has an installed capacity of 404MW.

The Bui Power Authority was established in 2007, the same year the contract was signed and mandated to plan, execute and manage the facility.

The Generation Station is contributing to enhancing the country’s generation capacity and somewhat ensure the reliability and security of power supply to the northern belt of the country.

Unlike the Akosombo Hydro Dam which operates all year round at peak and non-peak periods, the Bui Hydro dam was established to supply power during peak period of the day when demand for electricity is high. This is because the reservoir is not huge.

The facility operates base on forecast of the rainfall pattern and the anticipated inflows from tributaries upstream into the Black Volta and unto the dam.

In seasons where the tributaries dry up or have low water, the water level in the dam goes down. For example, this happened in 2020 and the first quarter of 2021 where the dam hit its minimum level of 168metres. 183 metres is the maximum elevation.

To ensure sustainability and prolong the life span of the facility in view of climate change, energy transition and for the Authority to continue to be in Business, the Act establishing Bui Power was amended to give it the mandate to venture into other renewable sources of energy.

Many believe this move was necessary because the future of the hydro dam cannot be guaranteed as tributaries which flow into the reservoir dehydrate. Hence the introduction of the concept, hydro solar hybrid. Call it a marriage between solar and hydro.

Mr. Adjetei of the Energy Ministry said government has developed a renewable energy master plan to encourage the use of renewable sources of energy as part of the energy transition measures.

He said the efforts of Bui Power dovetail into the countries attempt at increasing renewable energy into national generation mix by 10 % by 2030. The solar farm project, experts say will be a game-changer for the Authority as it will enable it to generate power day and night and address the climate change-related effects on inflow of water into the main dam.

Construction started on the first phase of the 250MW project in October 2019. The initial 50MW plant was commissioned in November 2020 and has been connected onto the National Interconnected Transmission System.

The Authority has also constructed a 1MW Floating Solar Plant on the reservoir, the first of its kind to be commissioned in the West African sub-region.

The Floating solar power plant is an innovative strategy of installing photovoltaic on water infrastructure to preserve the land, increase efficiency of the solar plant while also conserving water due to reduction in evaporation of water from the reservoir.

The Authority says the hydro solar hybrid project is its contribution as part of the Nationally Determined Contribution (NDC) towards the United Nations Framework Convention on Climate Change (UNFCCC).

Goal 7 of the Sustainable Development Goals SDGs which calls for affordable and clean energy urges nations to ensure access to affordable, reliable, sustainable and modern energy for all.

The goal advocates implementation of new energy solutions to counter climate change which is one of the biggest threats to our own survival.

Yes, the tributaries may be drying up as a result of drought but the Bui Power Authority says it has found the solution to continue to be in business if the rainfall patterns fail. It is Renewable Energy.

This is described in climate change circles as climate change Adaptation interventions.

See video here: <https://youtu.be/lwr5DmoLKZU>

This work is written/produced by Dominic Hlordzi, with technical assistance from the West African Journalists Association (WAJA), and the Mano River Union Natural Resources Rights and Governance Platform (MRU CSO Platform).

<https://www.gbcghanaonline.com/features/climate-change-ghana-uses-solar-power-plant-to-manage-drought-threatened-bui-hydroelectric-dam>