

Water Scarcity Under a Changing Climate in Ghana: Options for livelihoods adaptation

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ABSTRACT *The effects of climate change and variability on water availability in Ghana is being felt throughout the country. Coping with water scarcity has become a major issue. Most communities in the Offin River basin are rural with no pipe-borne water, and consist predominantly of farmers who depend on irrigation for their crops. The basin provides the communities with water for drinking, and for other economic activities. Benjamin Apraku Gyampoh, Monica Idinoba and Steve Amisah look at livelihood options to cope with water scarcity as the climate situation worsens in the coming years.*

KEYWORDS *disease; health; government; policy; rural development; agriculture*

Introduction

Climate change issues were not of major concern to most Ghanaians a few years ago. The reaction of the majority of Ghanaians, literate and illiterate, to news of climate change was that it was a phenomenon happening somewhere in Europe or America. Their understanding was not great and they reacted with indifference: 'we couldn't be bothered'. This was a topic that probably few researchers in climatology were concerned with. This has, however, changed completely. Nowadays, every Ghanaian seems to be a climate change specialist and will seize the smallest opportunity to give you a few lessons on the effects of climate change, at least on water resources. The whole country's awareness and climate change alert is very high.

This sudden change in perception and attitude gives much credence to the saying that 'experience is the best teacher'. The drying of rivers and streams, low or no rainfall affecting crop farming and a whole year of energy crises due to low water level in the Volta Lake, which produces hydro electric power for the whole country, seem to have awakened Ghanaians to the reality of climate change.

It has been predicted by some researchers that the climate pattern in Ghana, as in many parts of West Africa, is changing to that of reduced rainfall and increasing ambient temperatures. This predicted change comes with its own effects. These include lack of adequate rains to continue with our rain-fed agriculture, which is the main source of livelihood for most people, and drying of the streams and rivers that serve as the only sources of water for all purposes including drinking and cooking, in a country

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where about 65 percent of the population still live in rural areas with no access to pipe water. About 70 percent of communities in the Offin basin are also rural.

Predictions of climate change in Ghana, though clear on direction, seem to try to paint a moderate picture, like a mother scolding her child and not wanting the child to feel bad. In their attempt to avoid exaggeration, the predictions now do not really indicate the seriousness of the situation. Ghana's first communication to the United Nations Framework Convention on Climate Change in 2001, for example, predicted that most water basins will be marginally vulnerable by 2050, but it is quite clear, from even a lay point of view, that most water basins in Ghana are currently more than marginally vulnerable.

The situation in the Offin River Basin

Current developments in the Offin River basin confirm the gravity of climate change in Ghana. Rivers/streams in the basin that are tributaries of the River Offin are drying up, with some ceasing to exist anymore. These streams are the only/main sources of water. At two communities where the River is very big and the people used small canoes to cross all year round to their farms, the depth has decreased so much that for most of the year one can wade through the river to cross! Also, in Ghana most communities are named after an important resource such as a river, and one such community is Anyinamso. This community is named after the Anyinam River; therefore Anyinamso means 'on River Anyinam'. Currently, the Anyinam River has ceased flowing, making the town's name ridiculous and losing its history and identity.

Last year, for the first time, at another wide portion of River Offin, the river dried and gathered into very small pockets, leaving dry land. Hand-dug wells, which serve as alternate source of water in some communities, have no water in the dry seasons, when the streams are already dry. This makes water extremely scarce. The little water left in these streams is often muddied and of bad quality.

Coping with water scarcity

To cope with the water scarcity, people have to wake up very early in the day so as to get water that has not been muddied already by the early fetchers. School children and teachers alike spend a great deal of time searching for water for their households and this affects academic work in the schools. The little water that the family gets has to be rationed and treated with care so that the water can stay longer. Some people also have to resort to buying drinking water from sachet water producers, at a higher cost. Buying water for drinking is not a sustainable coping strategy since most of the people in the Offin River basin are poor peasant farmers.

Scarcity of water in the Offin River basin also has serious effects on the health of the people. During prolonged dry periods, when the rivers and streams cease flowing and become stagnant, insect larvae are often seen in the rivers/streams. Water drawn from the wells or boreholes in the communities becomes dirty and unwholesome for drinking, but there is no other source of water. Water-borne diseases such as malaria and bilharzias are gradually increasing in the Offin River basin. These diseases also have serious effects on the financial resources of the people because money has to be spent on drugs and medical treatment.

Another area where effects of water scarcity are strongly felt in the Offin River basin is agriculture. The people in the basin are mainly crop and vegetable farmers with some also engaged in cocoa farming. The system of farming is mainly rain-fall-dependent. The farmers, from years of experience, are able to predict the beginning and end of the rainy season and plant their crops to coincide with them. However, the rainfall pattern has changed so much that the farmers are unable to predict when the rains will come and synchronize their crop season. Even when they are able to plant at the onset of the rainy season, the rains cease abruptly due to a changed and unpredictable rainfall pattern. The effects of these changes are the failure of farms. Most crops grown are unable to grow to maturity due to lack of water from rainfall.

Failure of farms has a significant impact on livelihoods in the community because farming is

the main/only source of income for most households in the Offin River basin. A large amount of financial resources are invested into land preparation and planting of crops so the failure of a farm results in huge financial losses to an already poor farmer. The sale of produce from farms is a major source of income and crop failure means no income. Unfortunately, there are no proper means of coping with the effects of water scarcity on agriculture in the community. The farmers have to replant their failed crops and hope that the rains do not fail them the next time.

Reduced mean precipitations are the main change resulting in water scarcity in the Offin River basin. Although this change is very obvious in the basin, coping strategies being practiced currently by the people, as described in the earlier paragraphs, are just short-term, are not effective and are also not sustainable. To effectively explore proper and workable adaptation options, the questions that need to be answered are: who or which system is to adapt, what is the system to adapt to and how is the adaptation supposed to occur?

The system under consideration here is the communities living in the Offin River basin. This answers the question of who is to adapt. The communities are to adapt to the decreasing mean precipitation in the Offin River basin, which has affected the flow of rivers and streams in the basin, resulting in water scarcity in the basin. These communities are highly vulnerable to the effects of this climate change because all the livelihood activities in the communities are dependent on the availability and timing or predictability of the rainy season. The rains are needed for water to irrigate their farms, for drinking and cooking, and many other uses. Agriculture is the main source of income and without it the socio-economic life of the people is heavily affected. Because the people lack financial resources and there is no diversification in the source of income, they have a very small coping range for the effects of reduced rainfall.

Adaptation strategies

It is very clear that the communities on their own cannot implement any meaningful and

sustainable adaptation strategies. What they can do on their own is what they are doing now. All the coping strategies being employed by the communities are mainly reactionary. It is only after the hazards have manifested themselves that action is taken to mitigate it, although there is enough evidence to expect these changes. This is mainly because the poor farmers are not resourced enough to implement proper adaptation strategies.

It is proposed that the adaptation strategy should be anticipatory rather than reactionary. Adaptation strategies must be planned and this requires deliberate effort from policymakers to formulate and implement policies that are aimed at getting the people better positioned to handle the effects of low rainfall. For example, more sources of water should be provided by the government. Currently, the majority of wells constructed in the communities are privately constructed and they are not deep enough. As a result, they dry up soon after the onset of the dry season. More boreholes that go deep into the rock bed and have water in the dry season must be constructed to ensure water availability all year round.

The government and policymakers should consider the construction of small dams for irrigation purposes. These can help the farmers to cultivate their crops all year round without solely depending on the rains, since it is very clear now that the rains cannot be relied on. The resources and expertise that go into construction of irrigation dams is beyond the poor farmers. There should be research into the suitability of crops that do not need so much rainfall, so that the farmers are encouraged to start planting such crops.

Alternative sources of income should be explored and encouraged in the communities in the Offin River basin. Currently, rain-fed agriculture is the main/only source of income and this makes the communities highly vulnerable to low rainfall or prolonged water shortages. Income-generating activities such as mushroom cultivation, snail farming and grasscutter rearing can be encouraged in the communities so that the people will have other sources of income apart from crop farming. This will reduce the risk of heavy losses during periods of no/low rainfall.