



THE SOCIO - ECONOMIC IMPACT OF BUI DAM ON RESETTLED COMMUNITIES; A CASE STUDY OF LUCENE AND AGBEGIKURO COMMUNITIES IN THE NORTHERN REGION OF GHANA

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Abstract

The construction of dams for hydroelectric power results in widespread socio-economic impacts on communities. Lucene and Agbegikuro communities were purposively sampled to assess the impact of the creation of the Bui dam on some aspects of livelihood, culture and demography by aid of a semi – structured interview guide from November, 2013 to April, 2014. There were no significant differences in income levels before and after the dam creation in Lucene ($t = -1.229, p > 0.005$) and Agbegikuro ($t = -1.331, p > 0.005$). Before the dam creation, farming and trading were the main source of livelihoods in both communities whereas farming, fishing and trading were common after the dam was created. Job opportunities and infrastructure improved after the dam creation with Lucene recording > 30 % of its people changing their source of livelihood from farming to fishing while Agbegikuro recorded > 30 % of its people moving to the construction sector of the dam. Culture was affected due to loss of sacred grounds, structures and totems. Electricity was the least affected in Lucene and Agbegikuro with percentage composition of 64.88 % and 66.03 % respectively. Education and housing were the most negatively affected in Lucene (35.12 %) and Agbegikuro (33.97 %). Government should ensure a longer period of monitoring of resettlers adjustment to their new environment to reduce post resettlement conflict.

Keywords: Communities, Composition, Culture, Infrastructure, Livelihoods

Introduction

Energy demand worldwide has drastically increased and the race for clean, renewable energy has been on the frontier of most countries (Cernea, 1997). Many factors inhibit the acceptance of most forms of technological innovations due to its impact on the natural environment and socio-economic status of the people.

Hydroelectric power has been seen as one of the cleanest in terms of electricity generation, but brings to light other devastating problems in relation to the environment and its inhabitants (Lata *et al.*, 2013). Any water impoundment has the tendency to create both negative and positive effects on the environment, ranging from the

resettlement problems to perennial flooding, destruction of flora, fauna, loss of farm lands and fish species, displacement from ancestral heritage and exposure to alien diseases (Abdullateef & Ifabiyi, 2012). Using layout guidelines from Mettle and Sutcliffe's works and that of the Akosombo resettlement project frame work, this research on the socio -economic impact of the Bui dam creation on two selected resettled communities is geared towards providing reliable data on the impact of the dam construction on some aspects of livelihood, culture and demography of the people for consideration by Government, Bui power Authorities and other interested

agencies during institution of such projects for management purposes.

Methodology

Area of Study

The study was carried out in Lucene and Agbegikuro communities located in the Northern Region of Ghana. The areas have a unimodal rainfall pattern and found in the Guinea Savanna ecological zone with varying temperature ranging between 15° C in January and 42° C in March. The annual rainfall averages between 950 mm to 1100 mm (Kpodonu & Momade, 2008). Seven

communities namely, Bui (Bui village and Bui Camp), Batore Akanyakrom, Dokokyina, Lucene, Agbegikuro, Dam Site and Agbelikame (North and South) were displaced during the dam construction. However, due to the resettlement programme, these villages and camp have been grouped into three and according to resettlement phases A, B and C. At the time of this research, Phase A had already been settled as Gyama new settlement which include the villages of Brewohodi, Agbegikuro, Dam Site, Agbelikame (North and South) and Lucene. Phase B includes the villages of Bui, Bator Akanyakrom and Dokokyina. While Phase C covers Bui Camp.

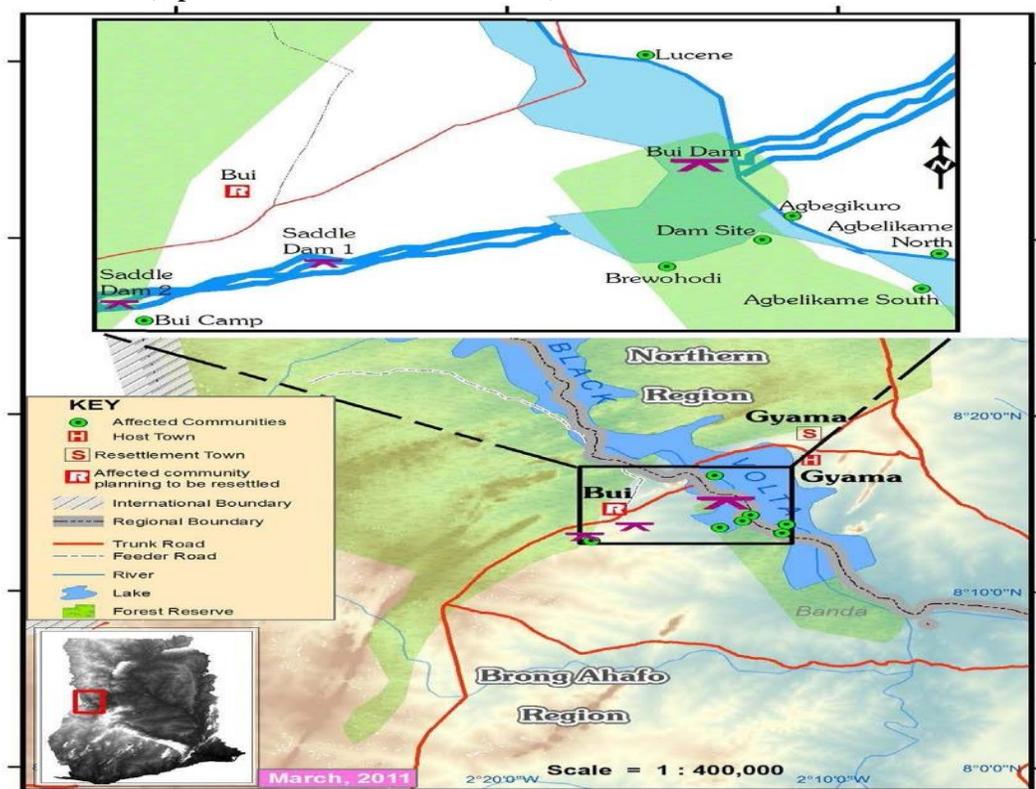


Fig1: Bui resettlement programme and study area (Source: Mettle, 2011).

Data collection and analysis

Data were collected from November, 2013 to April, 2014. Secondary data on the number of resettled communities and their population sizes were obtained from the Bui power Authority. By aid of a key informant, the two communities with relatively small population sizes were purposively sampled. All six households comprising 25 individuals in Lucene community were interviewed. In Agbegikuro community, 30 households were randomly sampled. Respondents in both communities were individuals from the households of age, 18 years and above. Interview guides were administered to solicit data on

livelihoods (occupation, income levels and infrastructure), demography (sex ratio) and culture of the people of Lucene and Agbegikuro communities. A focus group discussion was organised using a checklist to validate data on aspect of culture, source of livelihood and types of infrastructural development. By way of ranking, infrastructure affected by the dam creation was identified.

Descriptive statistics such as percentages and means were calculated using Microsoft Excel 2003. Income variations before and after the dam construction was

statistically tested for any differences if any using paired t – test (Minitab, Version 15).

Results and Discussion

Demography

Gender distribution is shown in Fig 2. The study showed that there were more males (62 %) than females (38 %) in Lucene because the females who traded more in the fishery sector travelled out to sell catch due to lack of ready market in the community. Contrary to Agbegikuro, more females (58 %) were recorded than males (42 %) because the males moved to work at the dam site where there was ready accommodation.

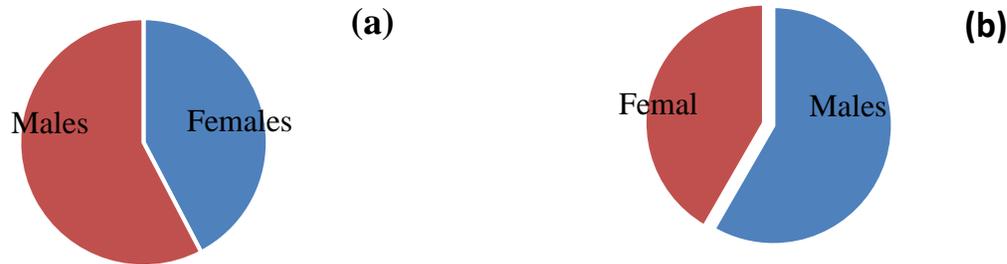


Fig 2: Sex ratio of Lucene (a) and Agbegikuro (b) communities from Nov, 2013 –April, 2014

Livelihood distribution

The various occupations identified in the communities before and after the dam creation are illustrated in figures 3 and 4 below. Before the dam creation, farming and trading were the main source of livelihoods in both communities whereas farming, fishing and trading were common after the dam was created.

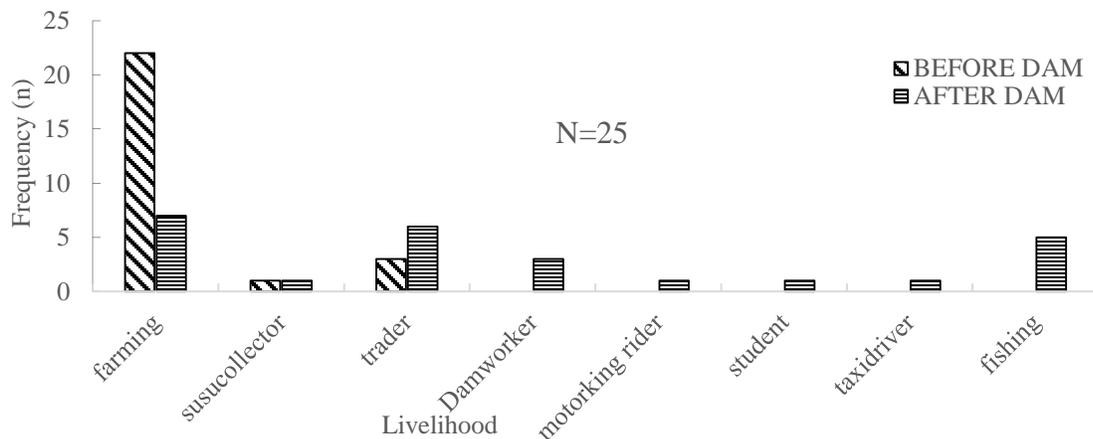


Fig3: Livelihood distribution in Lucene community before and after dam creation from Nov, 2013 –April, 2014 (N= number of respondents)

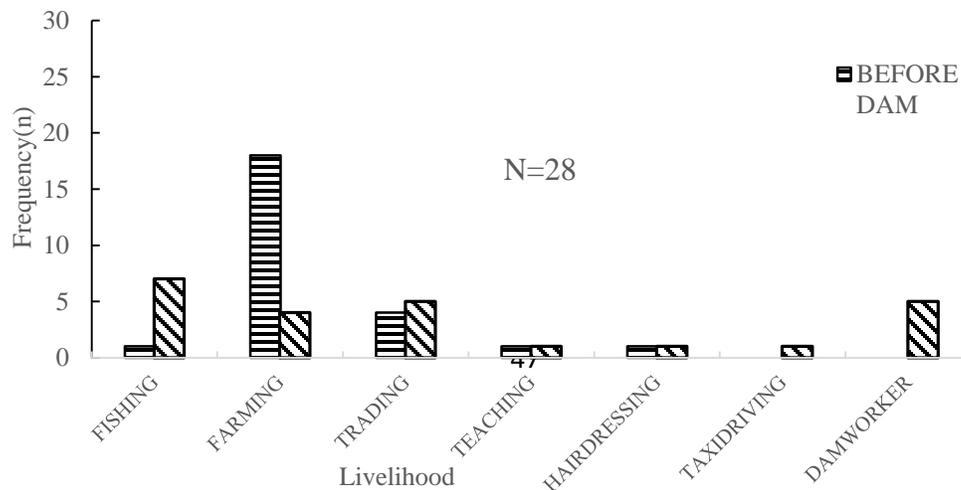


Fig4: Livelihood distribution in Agbegikuro community before and after dam creation from Nov, 2013 –April, 2014 (N= number of respondents)

There was an increase in job diversity in the region although some people chose to remain in their previous jobs owing to reason of startup capital and availability of labour. This is similar to a study by Mudzengi (2012) on Siya Dam in Zimbabwe where dam creation resulted in the availability of diverse jobs. In Lucene community, the study revealed that more than 30 % of the people changed their source of livelihood from farming to fishing whiles Agbegikuro saw over 30 % of the people moving to the construction sector of the dam. Agriculture was the most affected sector. It fell by 30 % due to inadequate farmlands, less job avenues with better income levels and lack of funding to restart cultivation on newly allocated plots of land. The fishing sector recorded 50 % increase in yield and working personnel. This could be due to favorable environmental conditions and the damming of water resulting in abundant water supply and creation of diverse microhabitats for fish survival. According to Mudzengi (2012), fishing, recreation and tourism dam may be enhanced through dam construction.

Effect of the dam on the livelihood status

From the occupation status (fig 5) the results showed that 31 % of the people in Lucene remained in the jobs they were into before the dam creation with 69 % of them changing jobs. In Agbegikuro 54 % maintained their jobs whereas 46 % changed jobs.

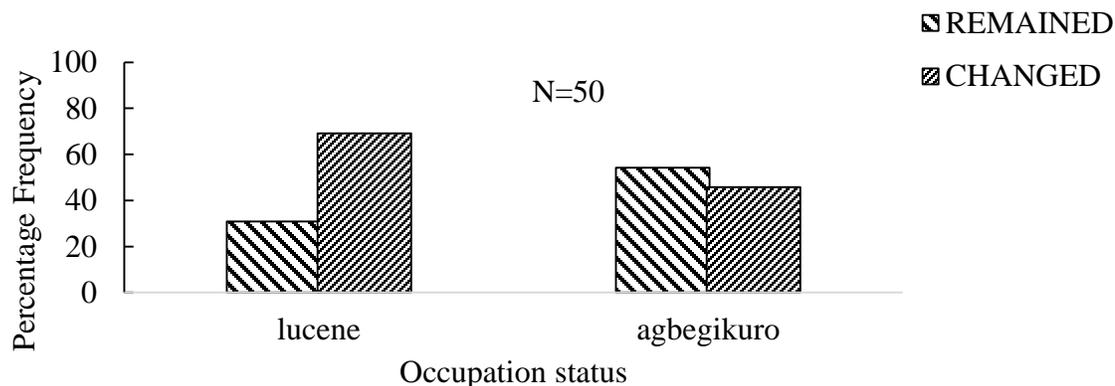


Fig5. Livelihood status after the dam was created in Lucene and Agbegikuro communities from Nov, 2013 – April, 2014 (N= number of respondents)

Income variation before and after the creation of the dam

Tables 1 and 2 illustrate income variations before and after the dam construction. The study showed no significant variation in income before and after the dam construction in Lucene ($t = -1.229, p > 0.005$) and Agbegikuro ($t = -1.229, p > 0.005$) communities.

Table 1: Income variation before and after dam creation in the Lucene community from Nov, 2013 – April, 2014

Variables	Individual means (Ghana cedis)	<i>t</i>	Significance difference
Lucene income before dam	195.38	-1.229	p > 0.005
Lucene income after dam	229.81		

Table 2: Income variation before and after dam creation in the Agbegikuro community form Nov, 2013 – April, 2014

Variables	Individual means (Ghana cedis)	<i>t</i>	Significance difference
Agbegikuro income before dam	157.00	-1.331	P > 0.005
Agbegikuro income after dam	204.00		

The insignificant differences in income levels might have been as a result of loss of old jobs, with so much dependance on resultant new jobs from dam creation which were highly competitive. This study is in contrast to Mudzengi (2012) on the Siya Dam in Zimbabwe where income levels increased after the dam creation. Furthermore, Tahmiscioglu *et al.*(2004) have it that the creation of dams do lead to increase in income levels however this did not reflect in this study.

Effect of the dam creation on various aspect of infrastructure

Relatively the respondents from Lucene ranked education (59 %) as the most negatively affected infrastructure (Fig. 6) and electricity (100 %) the least affected. Agbegikuro ranked housing (53 %) as their most affected and electricity (100 %) the least affected by the institution of the dam.

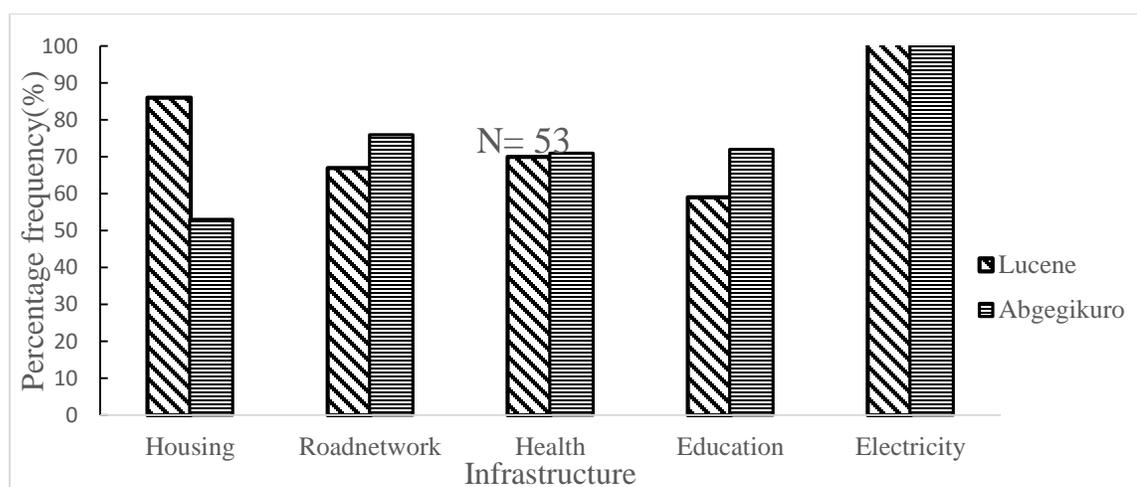


Fig 6: The effect of the dam on infrastructure in Lucene and Agbegikuro communities from Nov, 2013 – April, 2014

Both communities ranked electricity as the least negatively affected infrastructure because it was available before the creation of the dam and have less effect on their livelihood as they argued that they have no industry or company in high demand for electric power. Education was ranked the most negatively affected by Lucene, as there was less infrastructure to cater for the influx of pupils from other communities. Agbegikuro ranked housing as the most negatively affected because of the division it brought to their extended family system and also, competition for housing structures placed it as their highest need. Similar to a study by Lata *et al.* (2013) on the Sorang hydroelectric power project in India, education was the

most negatively affected in terms of infrastructure in the Kinnaur district.

Infrastructure like health and road network were ranked third and forth by both communities as least negatively affected. This was due to the fact that the creation of the dam led to an increase in population putting pressure on health centers. Furthermore the high cost of health service led the people to resort to the patronage of readily available and accessible herbal centers. Also their health centers have not been improved to meet their growing need.

The road network system was not negatively affected as the people travelled by boat to distant communities.

The effect of the dam on infrastructure is not in line with studies carried out by Bird (2012) on the Chalillo Dam in South America where the dam heavily impacted negatively on communities downstream through increase in energy prices, damage to the local economy, and inaccessibility to quality potable water. The domestic use of the water on Lucene and Agbegikuro communities had not changed since it was available and transportation was made simpler because

of the presence of more transport units. Use of the dam improved their sanitation because there was availability of water for domestic purposes such as washing of clothing and cleaning of their homes. This contradicts the findings of Mudzengi (2012) and Bird (2012) where the domestic uses of the dams were for supply of water to livestock and the supply of bush meat rather than fish protein.

Effect of the Creation of the Dam on some Aspects of Culture

Culture was affected in diverse ways in both communities by the dam creation (Table 3).

Table 3: Effect of dam on various aspects of culture in Lucene and Agbegikuro

ASPECT OF CULTURE	LUCENE (%)	AGBEGHIKURO (%)
Sacred groves, totems/animals and places of worship lost	57	48
Yam festival	17	14
Communal dance - difficulty in organizing, no community centre	20	28
Loss of ancestral graves	6	10

The religious worships in both communities explained that sacred grounds, animals and structures were lost to the dam. The traditionalists complained that their festival (Yam festival) was affected because they had less yield than previous years. Also, their traditional dance (light dance) seems to be dying off since communal gatherings are difficult to organize and community center is not well structured to contain the activity. They lost ancestral bodies buried in sacred ground because they could not relocate their dead. The construction of the dam brought about diverse ethnic groups with different cultural practices and this has diluted the culture of the indigenous people with regards to language to food. Before the dam was created they lived in an extended family system where children enjoyed folk tale of their ancestors and heritage was passed down to children, but now the dissemination of households into smaller sizes has dwindled the light on this aspect of culture. Mettle (2011) in a study on forced resettlement on Bui Village, Gyama New Settlement and Gyama Host Community, reiterates the unavailability of traditional

food (yam) for the celebration of their festival as one major area of culture affected by dam construction.

Conclusion

There was an increase in job diversity and opportunities and increase in the availability of fish as a source of food protein. However the communities lost farm lands, sacred grounds, animals and buried bodies. Therefore dam creation has impacted both negatively and positively on the social and economic aspects of the people of the communities. Although resettlement management plans were put in place by the Bui power authority, it has not placed the people in a perfect state of comfort as they were before the creation of the dam. To do this there should be a longer period of monitoring of resettles adjustment to their new environment and economic development. Their ability to get stabilized to this change should be observed to reduce post resettlement conflict.

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