

AN INSTITUTIONAL PERSPECTIVE ON THE ADAPTATION AND MITIGATION OF CLIMATE CHANGE IN THE HOUSING SECTOR IN THE NORTHERN REGION OF GHANA

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Abstract: The study examined adaptation and mitigation of climate change in the housing sector from an institutional perspective in the Northern Region of Ghana. The study employed descriptive research design within the qualitative approach. The data was acquired through in-depth interviews and document study. Officials from the regional Department of Rural Housing (DRU) and Metropolitan, Municipal and District Assemblies were interviewed. The study revealed that there was a high priority on technical training on housing construction, promoting the use of impact-resistant building materials, passive solar design as well as surface and underground tanks as adaptation measures while promoting the use of energy efficient household appliances was the only climate change mitigation measure in the housing sector. The Metropolitan, Municipal and District Assemblies on the other hand did not have specific institutional structures within the assemblies to deal with climate change issues in the housing sector. The study identified an insufficient finances, ineffective fiscal decentralization as well as logistics and equipment as the main challenges faced by the DRU in climate change response in the region. The study recommends that the department should be adequately resourced financially as well as working logistics and equipment to undertake their core functions.

1. Introduction

Climate change is a threat to national development (Dumenu & Obeng, 2016) and an environmental challenge facing humanity in the current century (Hamin & Gurran, 2009; Holmner et al., 2012). The debate about the reality of climate change has ended with clarion call involving adjustment of social and physical systems as well as limiting human activities that contribute to climate change (Adger, Arnella, & Tompkins, 2005; Nahiduzzaman & Haas, 2008; UNDP, 2008; cited in Laukkonen et al, 2009). Climate change has adversely

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affected food security, human health and ecological diversity (Bogataj, 2009). The effects and impacts of climate change are disproportionate within and across countries as well as among the rich and the poor in society. The hardest affected are the poor people because they tend to live in places that are very prone to climate stressors with less financial and technical assets to withstand the consequences of climate change (Verner, 2011; Harry and Morad, 2013; Tambo, 2016).

Climate change has resulted in sea level rise as well as more frequent and extreme events such as floods, rainstorms and hotter temperature (Tambo, 2016). The residential sector and the quest of the growing population for residence have the tendency to aggravate the climate change situation. This will in turn have significant impact on building designs, cooling and ability of buildings to withstand more extreme conditions of climate in the future which have been predicted to worsen in the business as usual scenario. Therefore, new insights on the design of residential building taking cognizance of the need for low carbon dioxide is imperative while aiming at adapting existing residential facilities to the current effects and impacts of climate change (Kinnane, Grey & Dyer, 2016).

Housing is one of the rudimentary needs of humankind besides food and clothing (Abimaje & Akingbohunge, 2013). At the same time, the settlement (including housing) of mankind as well as the performance of buildings in terms of energy consumption and human comfort is adversely affected by climate change (Rubio-Bellido, Pulido-Arcas & Cabeza-Lainez, 2015). In this regard, buildings need to be more adaptable to cope with the change in the conditions of climate as a preliminary step and secondly, more robust to cope with extreme events such as floods, sea level rise and rainstorms which are ubiquitous in recent times. At the same time, it would not be out of place to ensure energy efficiency at the household level (Keeffe & McHugh, 2014). Hiscock et al. (2017) posit that adaptation and mitigation strategies of climate change could have positive wellbeing implications on the inhabitants through green spaces and improvement in energy efficiency in housing. Therefore, the design, workmanship and the quality of building or construction materials has direct consequences on the health and wellbeing of humankind. Therefore, global warming could cause discomfort to people who live in substandard houses combined with limited or no access to social amenities (Hashemi, 2016).

The structure and composition of houses in the northern region is different from the Southern part of Ghana. In the Northern Region, houses are constructed with cement, mud, stone, wood, grass, and roofed with zinc or thatch. With large household sizes, overcrowding could occur which has implications for the health of occupants. At the same time, the climate condition

in the northern region is relatively hot as against the southern sector of Ghana. The climate in the region is affected by the rainfall and sunshine. With the increase in global warming resulting from anthropogenic and atmospheric processes, there is gradual discomfort unleashed on the people of the region. This has dire consequences on the health and wellbeing of the people who already live on low income coupled with poor residential structures accompanied by minimal or complete absence of amenities. It is against this backdrop that this study seeks to understand the extent to which housing has been incorporated into climate change adaptation and mitigation activities in the northern region of Ghana.

This paper is structured in the following order; the subsequent section after the introduction is the methodology. This is followed by the results and discussion section. Following the results and discussion section shed light on the challenges of the DRU. The final section presents the conclusion and proffers recommendations that can strengthen the role of the DRU in promoting mitigation and adaptation effort to climate change in the Northern Region of Ghana.

3. Methodology

3.1 Research Design

A descriptive research which is intended to make a thorough observation as well as taking comprehensive details of the phenomenon of interest that is being studied was undertaken (Bhattacharjee, 2012). In another realm, Glass and Hopkins (1984) posit that descriptive research involves gathering data that describe events and then organises, tabulates, depicts, and describes the data collection. Descriptive research in its true sense seeks to reveal the unique features of a phenomenon of interest which may be an individual or a situation. Bhattacharjee further contends that the observation should be in tandem with the scientific method in order that the results from the observation can be trustworthy as against causal observation carried out by untrained researchers. The case study method was used under the qualitative approach to research. A case study embraces the collection of ample data in an organized manner about a specific event, person, social setting or group so that a researcher will be able to get an in-depth understanding of the operations or function of the phenomenon of interest (Berg, 2001).

3.2 Sampling Technique and Data Collection

The purposive sampling technique was adopted in the study. It is a non-probability sampling technique premised on the researcher's use of his or her prior knowledge or capability in selecting participants for inclusion or otherwise

in a research. In using purposive sampling method, the researcher makes use of his/her judgment or knowledge to determine or select the subjects that are appropriate for obtaining the needed data from the population. Notwithstanding some of the shortcomings of the technique which borders on the generalization of the results, the strength of the usage of purposive sampling technique lies in its ability to identify or select individuals with certain attributes that can fulfill the data needs of the study. By and large, the primary goal of purposive sampling technique is to provide a rich description of the situation as compared to generalization (Glassner et al., 1983, cited in Berg, 2001).

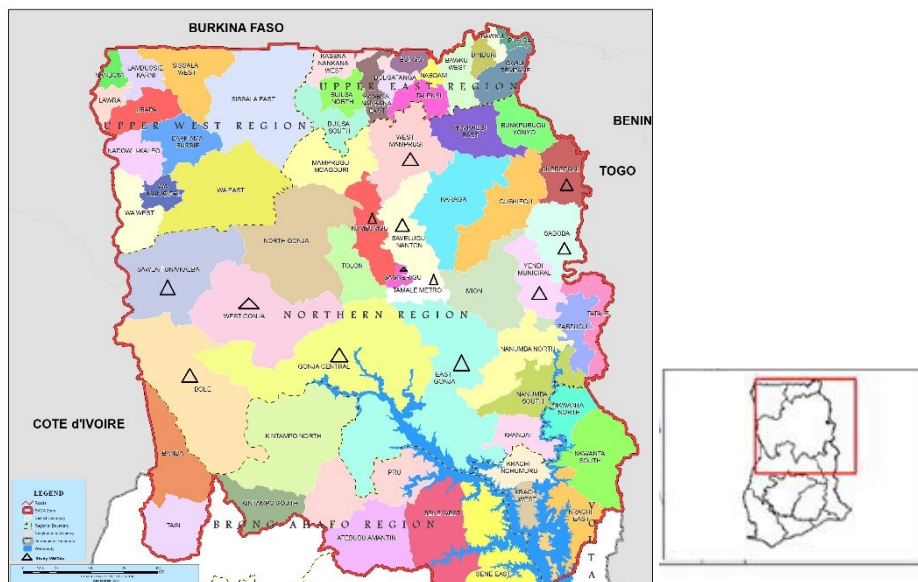


Figure 1: Map showing the location of Study MMDAs (Source: Modified from Government of Ghana, 2015)

Of the 26 Metropolitan, Municipal and District Assemblies (MMDAs) in the northern region of Ghana, the researcher meticulously selected thirteen (13) for the study. These districts were Tamale Metropolis, Yendi Municipal, Savelugu/Nanton Municipal, Bole District, Central Gonja District, Chereponi District, East Gonja District, Kumbungu District, Saboba District, Sagnarigu District, Sawla-Tuna-Kalba District, West Gonja District, and West Mamprusi District. The District NADMO offices were visited and in-depth interviews were held with District Directors or in their absence, Senior Disaster Control Officers using semi-structured questionnaires. Apart from the District NADMO

offices, the researcher also visited the Department of Rural Housing (DRH) and held interview with the Regional Director. This was to have an overall idea on activities that are geared towards adaptation and mitigation of climate change in the housing sector in the region. The in-depth interviews were complemented by document study to ascertain the veracity of the responses. The map presented below shows the location of the districts (see the triangles) that were selected for the study.

3.3 Data Analysis

The analysis of the data was carried out qualitatively using 2010 Microsoft Excel spreadsheet packages. Analysing qualitative data simply embraces the analysis of non-numeric or text-based data which are obtained from interviews and transcripts. It is important to be mindful that there is not a predefined manner in doing a qualitative analysis of data. Qualitative data analysis is to derive meaning out of the data or to comprehend the phenomena of interest in the social setting of the research (Bhattacharjee, 2012). Since carrying out a qualitative data analysis is not a forthright process, a sequence of stages was adopted in analyzing the data collected from the field. The stages were cyclical and iterative in the sense that there were backward and forward processes in the analysis. To commence with the data analysis, there was data screened. At this stage, the data collected was edited to eliminate and or to reduce obvious mistakes and to complete all uncompleted statements during the filling of the interview questionnaire. The main purpose of this stage was to retain the original ideas or responses given by the interviewees. After this, the data was entered into 2010 Microsoft Excel spreadsheet packages to make the analysis easier. Further interpretation was made on the inputted data which culminated in a meaningful write-up.

4. Results and Discussion

4.1 Main Functions of the Department of Rural Housing

The Department of Rural Housing (DRH) until its decentralization has been an agency under the Ministry of Works and Housing. The rudimentary functions of the Department include the following: provision of housing technology backstop to MMDAs; monitoring of state housing projects and report same through the Regional Coordinating Council to the Ministry of Works and Housing; policy formulation on housing provision at the regional level; provision of payback Roof Loans to low-income households to improve housing at community level; and facilitation of the provision of construction skills for local artisans and interested youth.

4.2 Climate Change Adaptation Measures

Adaptation to climate change in the housing sector is a step in the right direction in view of the imminent effects and impacts of climate change on the sector in the region. The study found that the Regional Department of Rural Housing carried out some initiatives which were aimed at responding to climate change in the housing sector. These adaptation measures and their level of priority are presented in Table 1.

Table 1: Priority of climate change adaptation measures in the housing sector in the Northern Region

Climate Change Adaptation Measures	Priority	Remarks
Promoting retrofitting/re-enforcement of houses	Moderate	Communities are educated to re-enforce their houses to withstand harsh weather conditions.
Technical training of communities on housing construction	High	Communities are trained to produce resistant building blocks by using eight wheelbarrow of gravel and half wheelbarrow of cement e.g a 3-unit classroom block at Diara in the Savelugu/Nanton municipality built by this method.
Promote use of impact-resistant building materials	High	Communities are encouraged to mix cement with mud in house construction.
Passive solar design (e.g adequate ventilation & insulation)	High	Two windows are recommended to be provided; one in front and one at the back of the room in order to ensure proper ventilation of air to prevent the incidence of cerebrospinal meningitis in the region.
Facilitating rainwater harvesting	Moderate	Encourage the provision of zinc with rain gutters
Other (surface and underground tanks)	High	Improvement of water availability to households in the dry season.

Source: Field Survey, June 2017

4.3 Climate Change Mitigation Measures

In the area of climate change mitigation in the housing sector, the department is only engaged in the promotion of energy efficient household appliances such as improved local stoves. According to the Regional Director, the initiative is low and not much has been achieved.

4.4 Climate Change Adaptation and Mitigation in the Housing Sector at the District Level

At the district level, there was no specific department responsible for housing although the actual planning and development of housing is a local level task. There is currently no Sub-Committee of the district assemblies responsible for housing. The assemblies only have Works and Social Services Sub-Committees but their jurisdictional functions do not transcend housing. As a result, there is an absence of conscious efforts on the part of local government to address housing gaps in the first place and not to even think of climate change issues in the housing sector.

4.5 Collaborations in Climate Change Adaptation and Mitigation in the Housing Sector

In the domain of collaboration, the Regional Department of Rural Housing has collaborated with an NGO and state institutions. Specifically, the department has collaborated with a Non-Governmental Organisation (NGO) called Housing the Masses in the construction of houses for some residents of the Malizeri community in the Yendi Municipality. The Department and the NGO also engaged in information and knowledge sharing at round table discussions on best house construction practices.

The Regional Department of Rural Housing has also collaborated with the Savannah Accelerated Development Authority (SADA) where district engineers in the region were trained on rural housing.

5. Challenges of the Department of Rural Housing

Just as most government institutions are not given the needed resources to function effectively in developing countries, so it is with the Department of Rural Housing in the region. The challenges encompass issues with inadequate staffing to finances as well as working logistics and equipment. Other challenges border on legislative and administrative processes which have hindered the smooth functioning of the Department in the region.

The major challenge of the Department was financial where central government have not honoured it budget or released just a small amount of their budget requirement to undertake activities in the region. In most instances, the budget was prepared but no funding. As a result, the respondent indicated that there is no major activity taking place except joint monitoring with Northern Regional Coordinating Council (NRCC).

The study also identified ineffective fiscal decentralization which had made accessing money for activities very difficult. The Director of the Department of Rural Housing stated that since the fiscal year 2016, the Department had not received full funding for it budget as part of the Composite Budget prepared by

the NRCC. He added that the Department was better off when it was under the Ministry of Works and Housing.

Last but not least, there was inadequate working logistics such as stationeries. As a result, these working logistics were purchased out of pocket money in order keeping the office running.

6. Conclusion

The central governments should create the enabling environment that would allow the Departments to carry out their devolved functions. The study found that although the Department was supposed to play a lead role in climate change adaptation and mitigation in the housing sector in the region, they were hampered by non-honouring of the budget, as well as working logistics and equipment. Therefore, the government as the main development agent should show a commitment not only to policy but in practice to tackle effects and impacts of climate change in the region in the area of housing.

7. Recommendations

In line with the findings of the study, the study recommends that the Department should be adequately resourced in terms of financial as well as working logistics and equipment to undertake their core functions. The central government should further budget and allocate funds that are meant for climate change activities in the region which are earmarked for the housing sector. For the researcher, the question about the availability of funds for climate change interventions to a large extent is a matter of priority of government spending. For instance, a lot of central government spending goes to personnel emoluments and purchase of a fleet of vehicles with high fuel consumption capacity. Similarly, the provision of motorized means of transport such as motorbikes and in some few cases vehicles and other logistics that will facilitate the work of the Department should be done by central government. With the right funding and available equipment and logistics on one hand, and proper monitoring on the other hand, could result in satisfactory outcomes in the implementation of climate change interventions in the housing sector in the region.

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