
GLOBAL WARMING AND CLIMATE IN BUGIRI DISTRICT: A CASE STUDY OF

BUGIRI MUNICIPALITY COUNCIL WESTERN DIVISION

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ABSTRACT

The main aim of this study was to find out whether there was a relationship between global warming and climate in Bugiri District; a case study of Bugiri municipality council western division. The research study used a descriptive survey research design to help in gathering information where little knowledge and information would be a known design, it also used simple random and purposive sampling techniques which were used to obtain a sample size of 44 respondents with in Bugiri District. The study sample consisted of 56.8% males and 43.2% females. Questionnaires and interview guides were used to collect data from respondents. The table presents the correlation analysis results of the relationship between global warming and climate, based on a sample size of 44.

*The Pearson correlation coefficient between global warming and climate is 0.469**. This indicates a positive, moderate correlation between the two variables, with a significance level of $p < 0.01$. The interpretation of this correlation coefficient is that there is a statistically significant relationship between global warming and climate. As global warming increases, there is a tendency for the climate to change in response. However, it's important to note that correlation does not necessarily imply causation, and further research would be needed to establish a causal relationship between the two variables.*

It was therefore recommended that opinion leaders should continue with dialogue on global warming solutions which might be a challenging but it is not entirely impossible. Global warming can be stopped when combined efforts are put in. For that, individuals and governments, both have to take steps towards achieving it.

Key words: *global warming and climate*

Background of the study

According to Graham Major-ex (2018), global warming solutions might be challenging but it is not entirely impossible. Global warming can be stopped when combined efforts are put in. For

that, individuals and governments, both have to take steps towards achieving it. We must begin with the reduction of greenhouse gas. Furthermore, they need to monitor the consumption of gasoline. Switch to a hybrid car and reduce the release of carbon dioxide. Moreover, citizens can choose public transport or carpool together. Subsequently, recycling must also be encouraged. Deforestation must be stopped immediately and planting of trees must be encouraged. In short, all of us must realize the fact that our earth is not well. It needs to treatment and we can help it heal. The present generation must take up the responsibility of stopping global warming in order to prevent the suffering of future generations. Therefore, every little step, no matter how small carries a lot of weight and is quite significant in stopping global warming (Gregory. J, 2008).

According to the scientists of US Geological Survey formed in March 3, 1879, global warming is the unusually rapid increase in Earth's average surface temperature over the past century, primarily due to the greenhouse gases released by people burning fossil fuels. The greenhouse gases consist of methane, nitrous oxide, ozone, carbon dioxide, water vapors, and chlorofluorocarbons (Arctic Climatology and Meteorology, 2010). The weather prediction has been becoming more complex with every passing year, seasons more indistinguishable, and the general temperatures hotter. The number of hurricanes, cyclones, droughts, floods, etc., has risen steadily since the onset of the 21st century. The super villain behind all these changes is Global Warming. The name is quite self- explanatory; it means the rise in the temperature of the Earth (Gracious. A, 2023).

Climate change is how the climate of different areas around the globe changes over time, Measurements shows a global temperature increase of 1.4 °F (0.78 °C) between the years 1900 and 2005. Global warming is closely associated with a broad spectrum of other climate changes, such as; Increases in the frequency of intense rainfall, Decreases in snow cover and sea ice, more frequent and intense heat waves, Rising sea levels, and Widespread Ocean acidification. Climate change can also occur naturally due to changes in sunlight, the growth of mountains, and the movement of the continents across the earth over time (Jackson, E , 2010).

Statement of the problem

Global warming and climate change are some of the most significant environmental challenges facing the world today. The effects of these phenomena are being felt across the globe, including in Bugiri District, Uganda. The district is experiencing adverse impacts of climate change, including unpredictable weather patterns, increased frequency and severity of natural disasters,

and reduced agricultural productivity.

The aim of this case study is to investigate the impacts of global warming and climate change in Bugiri Municipality Council Western Division, with a particular focus on the effects on the environment, human health, and socio-economic development.

The study examined the potential benefits of adopting climate-smart approaches, such as renewable energy, sustainable land management practices, and waste reduction strategies.

Specific objectives

1. To establish the level of global warming in Bugiri municipal council western division, Bugiri district.
2. To find out the level of climate changes in Bugiri municipal council western division, Bugiri district.
3. To examine the relationship between global warming and climate in Bugiri municipal council western division, Bugiri district.

Research questions

1. What was the people's knowledge about the global warming and climate in Bugiri municipal council western division, Bugiri district?
2. What was the extent to which global warming influence the level of climate changes in Bugiri municipal council western division, Bugiri district?
3. What was the relationship between global warming and climate in Bugiri municipal council western division, Bugiri district?

Methodology

Research design

According to Geneserth (1984), descriptive survey is a method of collecting information by administering questionnaires to a sample of individuals. This method was adequate for the study because it provided both quantitative and qualitative descriptions of the sample of the population this made inferences about some characteristic which was realized, attitudes and behaviour of the target population.

Study population

Study population is the total number of subjects or the total environment of interest to the researcher (Oso & Onen, 2005). The study targeted a population within the research geographical area. The study population included, local council chairpersons, community members of the municipality, teachers and students, farmers to determine the effects of global warming on climate changes, and also environmental officer of the same area for the developmental challenges making up a target population of 50 respondents and all these people are certified in different fields from Bugiri municipal council western division in Bugiri district. This helped the researcher to collect reliable and relevant data with large sample size.

Sampling procedures

Sample size

According to Kothari (2008), sample size is the number of items to be selected from the universe to constitute a sample. The researcher considered a sample size of n, and this was derived from the total population using the formula

Sample size, n = $\frac{N}{1 + Ne^2}$ (Isreal & Glenn, 2012).

n =

Were

n the sample size

N the study population

e² the precision which was 0.05 n =

50

$$\frac{50}{1 + 50(0.05)^2}$$

n = 44

Sampling techniques

Kombo and Delno (2006) defined sampling as procedures the researcher uses to gather people, places or things to study. It is a process of selecting a number of individuals or object from a population such that a selected group contains element representative characteristics found in the entire group. This study used both probability and non-probability sampling techniques which

enabled the researcher collect more reliable data from the field as explained below

Simple random sampling

According to Orodho (2004), Simple random sampling is a completely random method of selecting a sample in which each element and each combination of elements in the population have an equal and independent probability of being selected as a part of the sample. Being one of the simplest forms of random sampling, this method is a fair way to select a sample as each member of the population has an equal probability of being selected.

Stratified sampling

In this method, the population is first divided into subgroups (or strata) who all share a similar characteristic. It is used when we might reasonably expect the measurement of interest to vary between the different subgroups, and we want to ensure representation from all the subgroups. For example, in a study of stroke outcomes, we may stratify the population by sex, to ensure equal representation of men and women. The study sample is then obtained by taking equal sample sizes from each stratum.

Judgmental Sampling

Also known as selective, or subjective, sampling, this technique relies on the judgment of the researcher when choosing who to ask to participate. Researchers may implicitly thus choose a “representative” sample to suit their needs, or specifically approach individuals with certain characteristics. This approach is often used by the media when canvassing the public for opinions and in qualitative research. Judgment sampling has the advantage of being time-and cost-effective to perform whilst resulting in a range of responses (particularly useful in qualitative research).

Data collection methods and instruments

Observations

The observations are recorded in field notes or on a mobile device if the observer is collecting data electronically (like with Fulcrum). Some examples of observational data collection are building inspections, safety checklists, agricultural surveys, and damage assessments. Observation was an effective method because it was straightforward and efficient:

It didn't typically require extensive training on the part of the data collector, and he or she is

generally, not dependent on other participants.

Questionnaires

They can be conducted face-to-face, by mail, telephone, or Internet (in which case, they can include respondents from anywhere in the world). Surveys can contain yes/no, true/false, multiple choice, scaled, or open-ended questions or all of the above. The same survey can be conducted at spaced intervals to measure change over time. Some of the advantages of surveys are that respondents can answer questions on their own time, and may answer more honestly as questionnaires provide anonymity (whether real or perceived). And while the responses may be biased on the part of the participant, they are free from the collector's bias. These were in line with the objectives of the study.

Focus Groups

They provide the same type of data as in-person interviews, but add a social element and offer a broader understanding of why a group thinks or behaves in a particular way.

Focus groups are useful when examining cultural values or other complex issues, but also have their drawbacks. Lack of privacy or anonymity can present a major obstacle, as can "group think," or the potential for the group to be dominated by one or two participants.

Data analysis

Data was edited to identify and eliminate errors made by respondents. Coding was then done to translate question responses into specific categories. Descriptive statistics such as frequency distribution and percentages were used to analyze the data. Qualitative data was analyzed using content analysis in which all the responses were categorized according to their thematic areas and analyzed according to their contents. Presentation was done on tables and figures.

Statistical Package for Social Sciences (SPSS) software was used to aid in the analysis of data. From the analysis, the researcher was able to come up with the findings, conclusions and recommendations of the study.

RESULTS

Respondent's Background Characteristics according to their Categories

Beliefs are the background characteristics of respondents in different categories. These were identified in order to relate them to issues concerned with global warming and climate in Bugiri

municipal council western division Bugiri district.

Table 1: Categories of participants according to their gender, age and marital status

Item	Responses	Frequency (N=44)	Valid percentage (%)
Gender	Male	25	56.8
	Female	19	43.2
Total		44	100
Age	Below 21 years	03	6.8
	21-30 years	24	54.5
	31-40 years	12	27.3
	41 and above	05	11.4
Total		44	100
Marital Status	Married	20	45.5
	Single	20	45.5
	Divorced	04	9.0
Total		44	100

Source: Field Research, 2022

Table 1; showed that majority of the population interviewed representing 56.8% were males While females were 43.2% of the total respondents. The table also showed that local people felt in different age categories for instance, below 21 years were 6.8%, 21-30 years were 54.5%, 31-40 years were 27.3% while those 41 years and above were 11.4% respectively. This was because the population was randomly selected from different areas in the sample in Bugiri municipal council western division. Those above 41 years were considered as experienced population and who had involved in education for a number of years compared to the ones in the lower ages stated above.

Table 1: also indicated that most of the respondents 20(45.5%) were married and 20(45.5%) were still single while 04(9.0%) were divorced which meant that the study was representative enough and the findings could be relied upon.

Background factors of other Key Informants

Table 2: Background factors of Key informants in the sample

Item	Responses	Frequency (N=18)	Valid percentage (%)
Gender	Male	12	67
	Female	06	33
Age	Below 21 years	02	11.1
	21-30 years	08	44.4
	31-40 years	05	27.8
	41year and above	03	16.7
Position of responsibility	Farmers	04	22.2
	Government worker	03	16.7
	Business	06	33.3
	Not employed	05	27.8

Source, primary data 2022

As regards to the findings in table 2 above, it was noted that most of the key informants were males (67%) whereas females were 33%. This was done systematically to get first-hand basing on the research questions.

As regard to their age, majority of the respondent were 21-30 years (44.4%). On the other hand, the researcher asked the respondents whether global warming had been influencing climate, and 90.9% answered in the affirmative (YES) whereas only 9.1% answered in the negative form (NO). This implied that most responses could be relied on in order to understand the relationship that exist global warming and climate in Bugiri municipal council western division Bugiri district.

Table 3 showing household size of the respondents

Household size	Frequency (N=40)	Percentage (%)
1 to 3	12	27.3
4 to 6	22	50
6 and above	10	22.7
Total	44	100

Source: Field Research, 2022

In the study however, it was established that the smallest household 22.7% had 6 and above, while the middle 27.3% had 1 to 3 people and the largest house hold took the highest percentage of 50% in the study comprised of people who were 4 to 6. This was corroborated with the idea that large families may lead to high rate of climate change.

The bio-data for example age and gender and economic background of the participants**Table 4 showing the age of the participants**

The age composition of the study respondents was also an important factor in the process of understanding the influence of global warming on climate. This was so because different age groups were assumed to understand the study variables differently yet considered vital to the study. According to the study findings the respondent's views were as in table 4 below.

Age	Frequency (N=44)	Percentage (%)
Below 21 years	03	6.8
21-30 years	24	54.5
31-40 years	12	27.3
41years and above	05	11.4
Total	44	100

Source: Field Research, 2022

The table provides data on the age distribution of a sample of 44 individuals. The sample is categorized into four age groups: below 21 years, 21-30 years, 31-40 years, and 41 years and above.

Out of the 44 individuals, only 3 (6.8%) were below 21 years old, while the majority of the sample fell within the 21-30 years age bracket, with 24 individuals (54.5%). The 31-40 years age group comprised 12 individuals (27.3%), while only 5 individuals (11.4%) were aged 41 years and above.

From the data, we can conclude that the sample is relatively young, with the majority of individuals falling within the 21-30 years age bracket. This may have implications for the study or survey being conducted, as younger individuals may have different attitudes, behaviors, and experiences compared to older individuals.

It's important to note that the sample size is relatively small (N=44), so caution should be exercised when generalizing the findings to the larger population. Additionally, the sample may not be representative of the larger population in terms of age distribution, so further research may be needed to confirm the findings.

Table 5 showing the gender of the participants

Gender	Frequency (N=44)	Percentage (%)
Males	25	56.8
Female	19	43.2
Total	44	100

Source: Field Research, 2022

Table 5: also indicated that most of the respondents 25(56.8%) were males and 19(43.2%) were females which meant that the study was representative enough and the findings could be relied upon.

The entry of the people into the modern economy simultaneously initiated active industrialization. According to the findings revealed by one of the respondents stated that, more industries are urban based as compared to rural areas.

Table 6. Chi-square test on the Level of the people's Education

Education level	Number of participants (N=44)	Percentage (%)
Primary	04	9.1
Secondary	12	27.3
Tertiary	14	31.8
University	14	31.8
Total	44	100

According to Table 6, the primary level contained 04 (9.1%), the secondary level contained 12 (27.3%), tertiary level contained 14 (31.8%) and the university level contained 14 (31.8%).

According to this research, higher number of participants in the tertiary group was brought by high number of primary teachers and nurses in the area.

People's occupations in Bugiri municipal council western division Bugiri district. Table 7 showing the occupations of the participants

Occupation	Participants (N=44)	Percentage (%)
Not employed	13	29.5
Farmers	12	27.3
Business	14	31.8
Government worker	05	11.4
Total	44	100

According to Table 7, unemployed contained 13 (29.5%), the farmers contained 12 (27.3%), the business had the most participants with 14 (31.8%) and government workers were 05 (11.4%).

According to this research, higher number of participants in the unemployed group was brought by higher population in rural-urban migration for industrial opportunities in urban areas compared to the available agricultural jobs in the rural area. These results indicated that there was a statistically significant impact between global warming and climate. **Extent to which global warming influence the level of climate in Bugiri municipality council western division, Bugiri district.**

Table 8 showing the extent to which global warming influence the level of climate in Bugiri municipality council western division, Bugiri district.

Response	Frequency (N=44)	Percent (%)
To a higher extent	22	50
To some extent	12	27.3
To a smaller extent	06	13.6
Not at all	04	9.1
Total	44	100

Source: Primary data 2022

Majority 22 (50%) of the respondents indicated that global warming influence climate to a higher extent whereas 12 (27.3%) of the respondents indicated that global warming influence climate to some extent. In addition, 06 (13.6%) indicated that global warming influences climate to a smaller extent. It was stated by some of the respondents 04 (9.1%) who stated that global warming cannot influence climate but it depends upon the overall effects of educational functionality and implementation (participant 4 mentioned). However, the extent at which global warming impacts climate crucially depend on factors such as increased concentration of greenhouse gases in the atmosphere such as carbon dioxide, water vapor, methane which contributes to global warming hence changes in climate.

The relationship between global warming and climate

		Global warming	climate
Global warming	Pearson Correlation	1	.469**
	Sig. (2-tailed)		.000
	N	44	44
climate	Pearson Correlation	.469**	1
	Sig. (2-tailed)	.000	
	N	44	44

** . Correlation is significant at the 0.01 level (2-tailed).

The table presents the correlation analysis results of the relationship between global warming and climate, based on a sample size of 44.

The Pearson correlation coefficient between global warming and climate is 0.469**. This indicates a positive, moderate correlation between the two variables, with a significance level of $p < 0.01$.

The interpretation of this correlation coefficient is that there is a statistically significant relationship between global warming and climate. As global warming increases, there is a tendency for the climate to change in response. However, it's important to note that correlation does not necessarily imply causation, and further research would be needed to establish a causal relationship between the two variables.

Conclusion

The findings also suggested that global warming has become a grave problem which needs undivided attention. It is not happening because of a single cause but several causes. These causes are both natural as well as manmade. The natural causes include the release of greenhouses gases which are not able to escape from earth, causing the temperature to increase. Further, volcanic eruptions are also responsible for global warming.

Recommendations

It was therefore recommended that opinion leaders should continue with dialogue on global warming solutions which might be a challenging but it is not entirely impossible. Global warming can be stopped when combined efforts are put in. For that, individuals and governments,

both have to take steps towards achieving it.

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