

Awareness of Climate Change and its Impact: A Study among Natives of Bauchi State in Nigeria

Saddique Alhaji Mohammed¹ , Dr. Ripudaman Singh ²

^{1,2}Department of Geography, School of Humanities,

Lovely Professional University, Phagwara-144411, Punjab, India

Abstract:

Nowadays, studies in climate change are attracting significant awareness due to the global impacts of climate change, induced mostly by anthropogenic activities. This study examined the people awareness on climate change in Bauchi State. Data for this study were obtained from both primary and secondary sources. A total of 600 questionnaires were administered randomly across the six Local Government Areas using a random sampling technique while 563 were retrieved and analyzed using descriptive statistics of means and percentages. Results obtained revealed that majority (77%) of the respondents are familiar with the concept of climate change and among them 39% and 29% of the respondents perceived variability in temperature and rainfall respectively as the two major causal factors of climate change. The result further shows that 95% of the respondent agreed that deforestation accounts mostly for the incidence of climate change. However, 40% of the respondents mentioned the impact of climate change as severe. And 37% of the respondents believed that sensitization of community on how to preserve and nurture their environment so as to mitigate and educate the people on the significance of conservation of the natural environment are the most suitable solutions to address the problem of climate change. Based on the findings of the present study, it is recommended that the use of environment friendly sources of energy such as the use of kerosene, cooking gas and promotion of green environment (tree planting) among others to prevent severe impact of climate change.

Keywords: Awareness, Bauchi state, climate change, impacts, Temperature.

Introduction

Today, global climate change is a fact that the climate has changed visibly, tangibly, measurably. An additional increase in average temperatures is not only possible, but very probable, while human intervention in the natural climate system plays an important role. Climate is critical to the world due to human act on nature. The landscape, plants and animals in it, are all determined to a large extent by climate acting over long period of time. The most destructive impacts of climate change in Nigeria and other subtropical countries includes frequent drought, increased environmental



damage, infestation of crop by pests and diseases, diminution of household assets, amplified rural to urban migration, increased biodiversity loss, decrease of wildlife and other natural resource, changes in the vegetation type, decline in forest resources, decline in soil conditions (soil moisture and nutrients), increased health risks and the spread of infectious diseases, changing livelihood systems, etc. Peoples who are central and strong parts of many ecosystems may help to improve the elasticity of these ecosystems. The natural resources support the livelihoods of these ecosystems which are directly affected by climate change, and they often live in economically and politically trivial areas in diverse but flimsy ecosystems. In addition, they interpret and react to climate change impacts in artistic ways, drawing on people awareness as well as new technologies to find solutions, which may help community to muddle through with the looming changes. In the Subtropical region particularly the less develop countries, agricultural sector is more vulnerable to climate change, farmers, herdsmen, less privilege and mal-nourished people, children and women who head households, and those with low educational background, and those with low technological know-how are more close to the risk of climate change (Barber, 2003).

Study area

Six local governments were selected, and two from each senatorial district ie, Dass, Gamawa, Ningi, Toro, Warji and Zaki local governments in Bauchi State of Nigeria. Bauchi state is located between latitude $9^{\circ} 11'$ and $9^{\circ} 30' N$ and longitude $8^{\circ} 00'$ and $8^{\circ} 30' E$. The State is bounded in the East by Gombe State, in the North by Kano, Jigawa and Yobe states, to the West by Plateau state in the South by Adamawa and plateau states. The study area has witness a remarkable population growth in recent years. Bauchi state is one of the states in the northern part of Nigeria that span two distinctive vegetation zones, namely, the Sudan savannah and the Sahel savannah. The Sudan savannah type of vegetation covers the southern part of the State. Here, the vegetation gets richer and richer towards the south, especially along water sources or rivers, but generally the vegetation is less uniform and grasses are shorter than what grows even farther south, that is, in the forest zone of the middle belt. The Sahel type of savannah, also known as semi-desert vegetation, becomes manifest from the middle of the State as one moves from the State's south to its north. This type of vegetation comprises isolated stands of thorny shrubs. On the other hand, the southwestern part of the State is mountainous as a result of the continuation of the Jos Plateau, while the northern part is generally sandy. The vegetation types as described above are conditioned by the climatic factors, which in turn determine the amount of rainfall received in the area. For instance, the rainfall in Bauchi State ranges between 1,300 millimeters (51 in) per annum in the south and only 700 millimeters

(28 in) per annum in the extreme north. This pattern is because in the West Africa sub-region, rains

Table 1: Number of wards and respondents

Wards	No of Respondents	Percentage
Wandi	50	8.9%
Baraza	50	8.9%
Udubo	42	7.5%
Raga	43	7.6%
Bura	50	8.9%
Nasaru	50	8.9%
Gumau	48	8.5%
Rishi	43	7.6%
Bunga	47	8.3%
Katanga	47	8.3%
Gadai	46	8.2%
Tarmasuwa	47	8.3%
TOTAL	563	100%

generally come from the south as they are carried by the south westerlies. Therefore, there is a progressive dryness towards the north, culminating in the desert condition in far north. So also is the case in Bauchi State. Consequently, rains start earlier in the southern part of the state, where rain is heaviest and lasts longer. Here the rains start in April with the highest record amount of 1,300 millimeters (51 in) per annum. In contrast, the northern part of the state receives the rains late, usually around June or July, and records the highest amount of 700 millimeters (28 in) per annum. In the same vein, the weather experienced in the south and the north varies considerably.

While it is humidly hot during the early part of the rainy season in the south, the hot, dry and dusty conditions linger up north.

Map of Bauchi state



Map of Nigeria showing Bauchi state



METHODOLOGY

The data were collected from field study based on the results of 600 questionnaires that were administered in twelve selected wards from the six local governments of Bauchi state. For the purpose of administering the questionnaires, 100 questionnaires were purposively administered to each ward. A total sum of 600 questionnaires was administered. The study was conducted at the face-to-face level and obtained a response rate of approximately 93.8%. Out of the 100 questionnaires administered to each of the ward, 563 were analyzed because not all were completely returned or answered. The analysis was based on mainly descriptive analysis and presentation. However, Analysis of Variance (ANOVA) and Chi-square were used to test the relationship between the people's awareness and educational level, occupation and income of the respondents. Adaptation strategies associated to climate change. ANOVA and Chi-square were also used to see if significant difference exists towards reducing the impact of climate change.

Results and discussion

In this study about 30% percent of the respondents were farmers and businessmen respectively women even those who claimed not to be farmers engage themselves in little farming activities. 25% of the respondents reported civil servants jobs and the rest are mostly charcoal sellers. selling fire wood, rearing of animals and doing some menial jobs in the city. Considering the educational level of the respondents nearly 34% attended primary school and 33% secondary while 22% attended tertiary only 14 did not go to any school.

Fig. 1 Respondents occupation

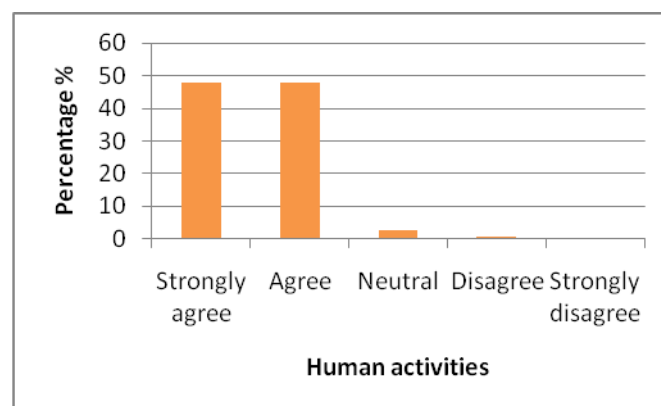


People's awareness towards climate change.

Most of the respondents (47%) agree that the climate has been changing over the years due human activities such as farming, deforestation either by cutting down of trees for fuel, roofing, farmlands extension, furniture; overgrazing, bush burning, urbanization and industrialization. Considering the issue of climate change 47% of the respondents agreed that the climate change is majorly cause by diverse human activities.

The respondents agree that climate change is a critical environmental issue that needs immediate attention. Majority(%) of the respondents believe that temperature increase has been rising over the past few decades, 84% of them expressed that rainfall is decreasing every year with varied rainfall anomalies and due to these the atmosphere is becoming dry every year disturbing human comfort within the study area as expressed by 81% of the respondents.

Fig. 2 Cause of climate change by the respondents



Almost all of the respondents agreed that climate is changing. However when asked whether they understood how the climate is changing almost 47% of the respondents indicated that they strongly agree and 33% agree in the change to some extent through temperature increase and the occasional flooding being experience.

Fig. 3 Temperature as a factor of climate change

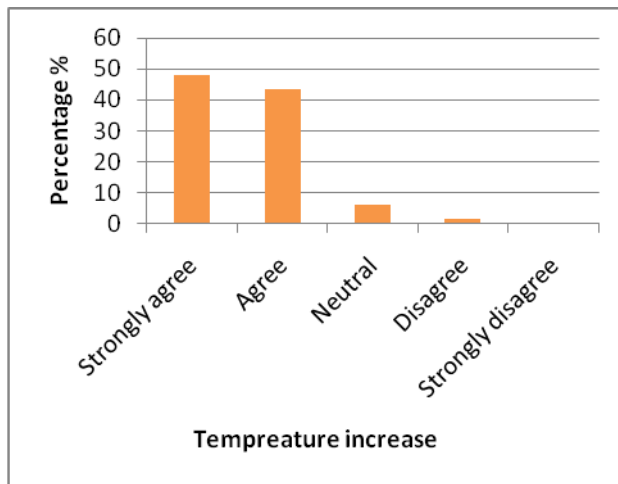
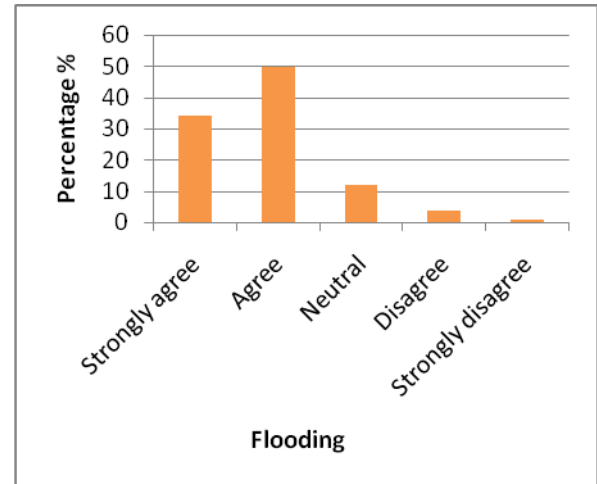


Fig. 4 Flooding as a factor of climate change



To further test their knowledge, all respondents were asked what they believed to be the cause(s) of climate change. Of all respondents, 30% attributed climate change to deforestation followed by Carbon Emissions (26%) followed by Burning of Fossil Fuels (25%). There were no great variations in this understanding between responses of the respondents. Some attributed climate change is a natural fluctuation in the earth. Some respondents agreed that Pollution was a contributing factor to climate change. When further probed as to what the causes of climate change were, participants of the focus groups stated that they might not be able to explain why deforestation, burning of fossil fuels and carbon emissions cause climate change, but they are aware that those are contributing factors. The common issue across all wards, the respondents have stated that key factor in climate change is the destruction of forest.

Effects of Climate Change

Regarding the current and/or possible future effects of climate change in their area most respondents stated that there is a shift in planting and harvesting period and also a change in crops being planted and also a change in agricultural practice. Increase in temperature is the most evident (84%). However, this might have been the case due to the current climatic event which saw the coast experiencing a longer dry season. Although 56% of all respondents reported that they experienced floods by rainfall, only 15% of the respondents reported that a future effect of climate change would be more rain, whereas 93% of the respondents stated that hotter temperatures and 36% stated less rain were the future effects of climate change.

Of the respondents who experienced natural disasters, 74% of the respondents experienced some kind of loss as a result. Respondents who were impacted were most impacted through damage to property (64%) caused by water damage from flooding. As Toro does not suffer from irregular flooding, none of the respondents from this local government encountered a loss in property due to flood.

Fig. 5 Responses on increase in rainfall

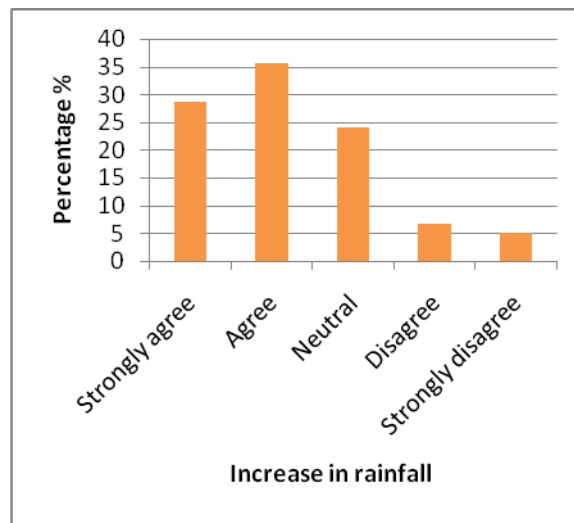
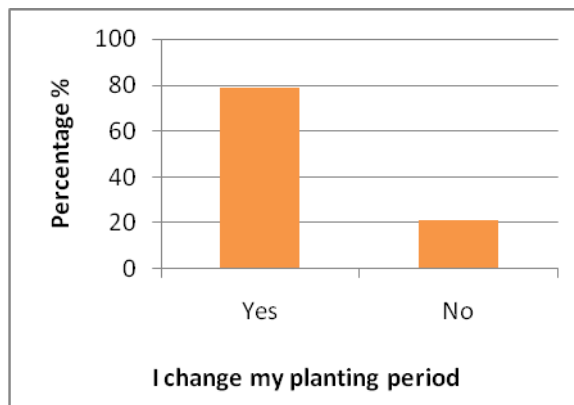


Fig.6 Responses on change planting period

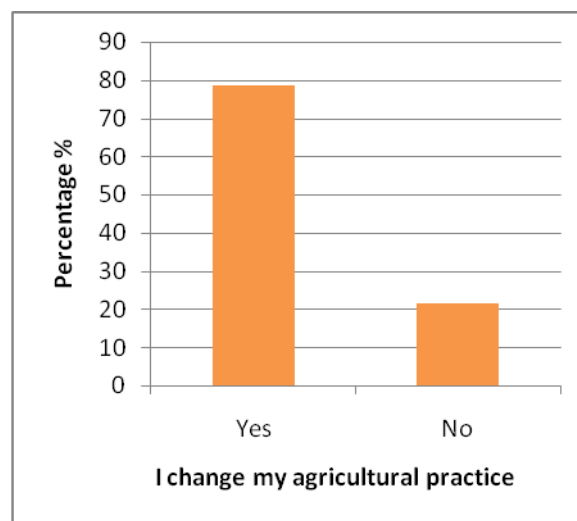


Attitude towards climate change.

Respondents were asked how they felt about climate change. According to 56 percent of

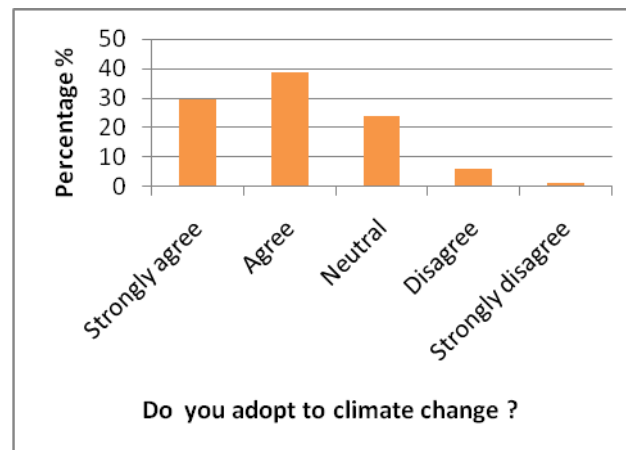
respondents, they were 'hopeful' that something could be done while some of the respondents were doubtful about whether climate change could be mitigated (2%) since they do not agree that it is their responsibility to take action to mitigate climate change and another 7% of the respondents were unsure as to their feelings towards the subject. When the respondents were asked whether government is doing enough to tackle climate change, about 47% agreed, about 47% agreed and 98% agreed that radical changes are needed in the community to tackle climate change. In Ningi and Warji local governments, about 50% agreed that they suffered so many damages to property due to flooding. 28% of those who were impacted reported loss in income due to disruption to livelihoods. Another 19% reported loss in agricultural production and 4% reported loss in livestock. However, of all the respondents who reported that they farmed (n=93), 72% stated that they suffered losses in agricultural production which led them to another agricultural practice as a result.

Fig. 7 Responses on change in agricultural practice



Respondents in Dass and Zaki local governments highlighted that they were affected by floods due to heavy rainfall (61%). However, of all the respondents in Warji and Ningi local governments, 35% stated that they were affected by floods due to River Bunga which affect the area. Upon further probing,

Fig. 8 Responses on adoption to climate change



respondents who experienced floods reported that the drainage due to poor waste management caused their yards to floods. Hence, although floods may have been caused by excessive water, the effect may

have been exacerbated by poor drainage infrastructure and waste management. This may also explain why 40 percent of respondents from the local governments stated that they adapted to climate change by clearing drains and only less than 10% have disagree on adopting to climate change

Conclusion

In this study, it is apparent that people in Bauchi State are very much aware of the climate change going on in their environment. The awareness of the respondents agrees strongly with the contribution of human activities to climate change compared with other factors facilitating the prevalence of climate change. This study strongly suggests that climate change is happening, and is projected to increase due to the ongoing and increasing human activities and other factors, if allow to continued and checked, the impacts of climate change will become more serious as global warming continues over the coming decades, with an increasing risk of drastic changes to the climate system. Whether this is disastrous will depend on how rapidly greenhouse gas emissions can be reduced and at what level greenhouse gas concentrations can be stabilized. Although other factors such as farming and overgrazing among others contribute to climate change phenomenon. However, to mitigate the impact from the climate change, community should be sensitized on how to preserve and nurture their environment so as to mitigate the severe impacts of climate change and also to educate the people on the significance of conservation of the natural



environment, support the most environmental friendly people and groups towards achieving set goals and objectives in the study areas.

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