

Adaptation and perception of climate change on lake chad community

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Abstract : *The perception of climate change and adaptation in lake chad community, the structured questionnaire was administered as the means of primary data collection other material such as internet and other written material was used as the source of secondary data collection. The result revealed that the doubling price of firewood per annum and at same time supply is dwindled, insufficiency and irregularities in supply of some fuels like kerosene and gas and the unstable supply of electricity has made the people in the area to go for charcoal as a source of fuel which consequently increased the level of deforestation and has reached a kind of ecological disaster. Community believes that the decreasing in downpour and temperature is the one that lead to famine and frosts in the local. Therefore, the study made the following recommendations; legislation should be put in place against indiscriminate felling of trees, government should enhance the supply of other sources of fuels like kerosene and gas, improve electric power supply and the people should be enlightened about the dangers of deforestation.*

Key Words: *climate, deforestation, ecology.*

1. INTRODUCTION:

Climate change is an environmental, social and economic challenge on global scale (schlze et al 2006). Climate change can be aggravated due to human induced action, such as wide spread use of land for agriculture, urbanization and industrialization as a result of high population growth rate. Which leads to a large-scale deforestation.

The most deviating adverse impact of climate change in sub-Saharan parts of Northern Nigeria, include frequent thought increase infestation of crop by pest and debase, increase biodiversity loss, deletion of wild life and other natural resources base. Change in soil condition (soil moisture and nutrients) increase health risk and spread of infestation disease and changing live hood system (Reilly 1999 Abaje and Giwa2007).

In Nigeria particular the semi-arid region of northern Nigeria, the agricultural sector is more vulnerable to climate change in particular former, live stocks keeper. People in poor health, those who are undernourished people with low economic power, women and children including woman headed and hold those with low technological know. How are more vulnerable to the risk of climate change. There is clearly a risk and burden on labour differences in power, income and economic resources, biological differences and other cultural pattern and social roles (Barber 2003).

People are vital and active parts of ecosystem, and may help to enhance the resilience of those ecosystem, that their lively hood depend on natural resources that are directly affected by climate change; they may help to interpret and react to climate change knowledge as well as new technology to find solutions which may, help society at large to cope with impending change (jan and Anja 2007).

2. METHOD:

This study will combine both desk and field research. The desk research will focus primarily on the theoretical basis of the study. This will be done by reviewing several relevant secondary data available.

The field work will have employed to determine empirically from all perspectives the causal factors for the perception of women to climate change and adaption

3. RESULT AND ANALYSIS:

This chapter contains the result of the analysis of data collected during field work. The discussion covers the following aspect of the study; personal characteristic of the respondents, their livelihood activities, environmental characteristic and awareness of climate change issues, activities of the government and the other organization. Other key informants such as ward head, district head and local government officials as well as focuses group discussion were considered.

3.1.0 The Socio-Economic Characteristic of the Respondents

Table 1. Age of Respondent

Age Interval	Frequency	Percentage (%)
15-24	28	22
25-34	50	40
35-44	25	20
45-54	10	8
55-64	8	6
65 and above	4	3
Total	125	100

Source: fieldwork, December, 2020

Table 1. shows that out of the all the respondent, 40% are between the age of 25-34 while 3% are between the age of 65 and above.

3.1.2 Educational Qualification

Table 2. below shows Educational qualification

Type	Frequency	Percentage (%)
Informal Education	36	29
Adult Education	9	7
Tertiary Institute	42	34
Primary School	32	26
Total	125	100

Source: fieldwork December, 2020

Table 2. shows that 37% attended tertiary institution while 29% attended informal education precisely Islamic school. Those who attended primary, adult education and secondary respectively account for 5%. This revealed that all the respondents were literate enough to give sufficient answer to the questions asked.

3.1.3 OCCUPATION

Table 3. The occupational of the respondents

Type of Occupation	Frequency	Percentage (%)
Civil Servant	29	23
Student	27	22
Traders	35	28
Farmers	22	18
Full Household	12	10
Total	125	100

Source, field work December, 2020

Table 3. indicates that 28% of the respondents are traders, 18% are farmers and 10% are constitute full household. This suggest that most of the respondent are engaged in some livelihood activities.

3.2 Human Perception on Climate Change Issues

Climate change impact on natural resources over the past 20 years The Effect of climate change will lead to rise in global temperature (Houghton et al 1996). This phenomenon is emerging with detrimental effect. When respondent was asked whether resources such as water land and forest has declined, improved or has no changed, their responses are discussed below in the study area, majority of the people depend so much on the environmental resources. When asked whether climate change has affected the nature resources over the last 20 years, they responded as depicted below.

Table. 4

Natural Resources of Climate Change	Frequency	Percentage (%)
Resource Declined	91	73
Resources improved	19	15
Resources not change	15	12
Total	125	100

Source's fieldwork December, 2020

About 73% of the respondent confirmed that there has been a declined in the natural resources of their community over the past 20 years. While 15% were of the view that resources have not changed. The majority suggested that there has been a declined in the natural resources owing to climate change.

Through group discussion revealed human perception of climate change and its causes. They were of the view that climate change occurred as a result of both natural and human activities which causes change in the season. They

perceived, it is much hotter now than some years back and also confirmed that the onset on rains are late those days than before. The perceived evidence of climate change was increased temperature, drought, insufficient rainfall, low crop productivity, erosion prevalence or breeding of pest such as mosquitoes, grasshopper and birds.

3.3 Environmental Problems

The respondents were also asked which environmental problems affect them most and their responses given below

Table 5. Responses on environmental problems.

Environmental Problems	Frequency	Percentage (%)
Desertification	8	6
Deforestation	11	9
Soil erosion	12	10
Pollution	25	20
Pests	13	10
Drought	14	11
Climate change	42	34
Total	125	100

Source: fieldwork December, 2020

Table 5. shows that 34% of them were affected by climate change through all of the above listed effect. Climate change result in drought, desertification and breeding of mosquitoes while pollution and deforestation encourage climate change.

3.4 Crops Grown

The various crops grown by the respondents are shown in table 6.

Table 6. Responses on crops grown.

Crops grown	Frequency	Percentage (%)
Groundnut	58	46
Beans	37	30
Millet	16	13
Others	14	11
Total	125	100

Source: fieldwork December, 2020

From the table above 46% of the respondent cultivate groundnut while 30% engaged in cultivating beans. This has shown that the majority within the study area cultivate groundnuts. This is because groundnut is short life cycle crops that do well within the short rain season.

Adaptation Strategies Employed by The Respondents to Climate Change.

Through group discussion, and other respondents provide, information on perception of, climate change and its effect as well as the various local strategies they employ in adapting to changing climate. The opinion of the respondent on adaptation strategies, to climate change was assessed based on the questionnaire administered to them.

The information provided by the respondent revealed that during the dry season the respondent adapt by consistent bathing taking allot of water, use of fan, bathing with cold water, resting under a tree shade wearing light clothes, occasional use of Vaseline, and cream and sleeping outside during hot season. Some of the respondents use irrigation scheme on their farm during the dry season. During the cold season they respondents adapt by wearing warm clothes frequent use of Vaseline, bathing with warm water sleeping with blanket, and hand gloves and socks reduction in water intake and land conservation techniques by ensuring good drainage system to reduced mosquitoes, encouraging trees planting and discourage overgrazing so as to reduce erosion.

The detailed are shown in table 7.

Table 7. Adaptation strategies of people in dry season

Adaptation strategy	Frequency	Percentage (%)
Consistent bathing	14	11
Wearing of light clothes	10	8
Sleeping outside	11	9
Consistent intake of water	20	16
Bathing with cold water	7	6
Use of fan	8	6
All of the above	55	44
Total	125	100

Source's fieldwork, December, 2020

The table shows that there is significant difference in the extend of adaptation strategies of combating climate change in the study area among the various respondent: 44% adapt in dry season by the use of all of the above-mentioned strategies; 11% adapt by consistent bathing, 16% adapt by consistent intake of water and so on. The questionnaire revealed that most of the respondent use all the above-mentioned strategies in other to prevent themselves from diseases associated with hot weather.

Table 8. Adaptation strategies in cold season.

Adaptation strategies	Frequency	Percentage (%)
Land conservation techniques	30	24
Sleeping with blanket	15	12
Wearing of warm clothes	22	18
Bathing with warm water	11	9
Use of Vaseline after bath	15	12
All of the above	32	26
Total	125	100

Sources; Fieldwork, December, 2020.

The table 8. shows that 26% of the total respondents use all the above-mentioned strategies to cold season; While 24% of the respondents adapt by the use of land conservation techniques through proper drainage, trees plantation and adequate refuge disposal around their houses. The large proportion of the respondent adapt by the using of all the above listed strategies. This is so because it will save them from some diseases such as pneumonia, catarrh and other diseases that are associated with cold weather.

3.5 Hindrance of People Adaptation Strategies to Climate Change

Table 9. Respondents Hindrance to Climate Change

Hindrance	Frequency	Percentage (%)
Poverty and ignorance	60	48
Lack of basic social amenities	30	24
Lack of current knowledge on adaptation methods	20	16
Age influence inequality	15	12
Total	125	100

Sources, fieldwork, December, 2019

Table 9. shows that 48% of the total respondent are faced with poverty and ignorance; while 24% of the respondent lack basic social amenities within the study area. This study shows that the people in the study area have very weak adaptive capacity toward talking climate change problems. Poverty and ignorance are the major contributing factors of people inability to adapt to climate change.

3.6 Most Vulnerable Age- Group to Climate Change.

Table 10. below shows the most vulnerable age-group to climate change.

Table 10. Vulnerability to Climate Change

Age Interval	Frequency	Percentage (%)
15-24	18	14
25-34	22	18
35-44	26	21
45 and above	59	47
Total	125	100

Sources, December, 2019.

The table 10. indicate that out of the total respondents, 47% fall within the age group of 45 and above. This is the most vulnerable group to climate change impact. This is because elderly is 45 and above. Therefore, people especially elders are the most vulnerable one to the impact change. Climate change aggravate their health risk, food shortage, poverty rate and malnutrition.

3.7 Relationship Between Gender and Climate.

Gender describes the unequal relationship between men and women and makes clear that the prevailing unequal gender roles and relation help to limit women participation, contribution in the society and makes them vulnerable to climate change (Budhu, 2002). The interview conducted through the questionnaire for the key informants such as district head, ward head and local government officials indicated that poor men, women and children are the most vulnerable. Other respondents and the focuses group discussion shows that people especially elderly people and

children are most vulnerable one to climate change because youth are the most vulnerable one to climate change because people are the poorest people in the society and highly dependent on local natural resources.

Majority of the respondents in the focus group discussion and other respondents are of the view that people are more vulnerable to climate change than youth due to the traditional belief and values which serve to justify people inferior economic, political and social status in the society. It indicated that climate change will affect women more severe than men.

Table 11. The table below shows the Hindrance of women to gender equality.

Table 11. women’s Hindrance to Gender Equality.

Hindrance	Frequency	Percentage (%)
Culture and social status	30	24
Poverty and ignorance	40	32
Absence of women in decision making	18	14
Denial of girl-child education	17	14
Difference in income, poverty, labour and economic	20	16
Total	125	100

Sources, December, 2019

From the table 11., 32% of the total respondents are of the view that poverty and ignorance is the major hindering factor for women.

Other respondents opined that women are neglected by some culture and belief in the society. The denial of girls-child education affects women.

Table 12. below shows the addressing of gender inequality to climate change impact.

Table 12. Gender inequality to Climate Change.

Mitigation	Frequency	Percentage (%)
Education and training of women	44	35
Involvement of women in decision making	20	16
Gender empowerment measure	16	13
Awareness-missing	18	14
Capacity-building	10	8
Evaluating institution for gender balance	17	14
Total	125	100

Sources, fieldwork, December, 2019.

From the table above 35% Of the total respondents are in support of the education and training women at all level and ensuring that girls-child education is a necessity in the society within the study area.

Impact of climate change on socio-economic activities.

The effect of climate element; sunshine, rainfall, wind and high temperature on socio-economic activities is undeniable in environment. Climate change is associated with common diseases in hot weather such as yellow fever, cholera, chicken pox, meningitis and so on. During cold season diseases such as pneumonia, catarrh and rheumatism are common within the study area. Climate change affect man, animal and the environment.

Table 13. below shows the Responses on the degree of the impact of climate change on crop farming.

Table 13. to Human Health (Dry Season).

Degree of impact	Frequency	Percentage (%)
15-24	18	14
25-34	22	18
35-44	26	21
45 and above	59	47
Total	125	100

Sources, fieldwork, December, 2019

Table 13. shows that out of the total number of respondents, 50% are of view that climate change has seriously affected agricultural activities such as crop farming, fishing cattle rearing and other agricultural activities. This is so because climate change result to drought which result in lowering agricultural productivity.

Table 14. below shows the impact of climate change on agricultural production.

Impact	Frequency	Percentage (%)
Poor soil quality	18	14
Low crop production	16	13
Reduction in labour input	10	8
Low animal productivity	9	7
Reduction in pasture for grazing	15	12
All of the above	57	45
Total	125	100

Sources, fieldwork, December, 2020.

Table 14. above shows that climate change affects soil quality, crop productivity, labour input and reduces pastures for grazing. Inadequate rainfall (drought) reduces pasture production, crop production, labour input and animal productivity. Lack of water and moisture in the soil tend to reduce soil quality.

Table 15. below shows the Impact of climate change to human health in hot season.

Table 15. Respondents of Human Health to Climate Change (Hot Season)

Impact	Frequency	Percentage (%)
Irritation on the eyes	28	22
Cholera	42	34
Measles	25	20
Meningitis	30	24
Total	125	100

Sources, fieldwork, December, 2020.

From the table above 34% were of the view that cholera, is the most common diseases associated with hot season. This is because of poor drainage system, stagnant water and dirt of difference kind, along the road side, house and water channel encourage flies which aggravate cholera.

The table below shows the Impact of the climate change on human health in the cold season.

Impact	Frequency	Percentage (%)
Catarrh	65	52
Pneumonia	40	32
Asthma	20	16
Total	125	100

Sources; fieldwork, December 2020.

From the table above 52% of the respondents are of the view that catarrh is the most common diseases in the study area during cold season.

4. FINDINGS :

The findings of this study shows that the menace of climate change is more on youth and children. People adapting to climate change strategies in the study area include land conservation techniques, planting of trees around their houses, wearing warm clothes during cool weather and using local nature on their farm to enrich the soil.

5. CONCLUSION:

The change in climate pattern and the destruction of the natural resources base results to the unpredictable and erratic rainfall pattern, increased temperature, increased evapotranspiration, increased deforestation, diminishing pastures and water availability, frequent drought, change in the livelihood pattern of the communities, loosening of social cohesions, increased social conflict between communities (farmers and herdsman). Increased incidence of disease and epidemics and increased community displacement from fragile environment.

6. RECOMMENDATIONS:

The following recommendation are proffered for alleviating the impact of climate change in the study area:

- i. Meteorological stations and tool from monitoring the environmental should be built and maintained in the study area.
- ii. People needs and interest should be at the heart of national and local research and policy planning on adaptation. The social and economic impact of climate change on people should be at forefront of any

- research policy formulation. This can only be possible when youth in the study area are involved in decision making and policy implementation. Government and societies should encourage gender equality.
- iii. Community base planning is the starting points for scaling up provincial and national responses. One of the best ways of reducing the risk from climate change is to draw on people's own experience perception at community and village level, and to use that as an integral ingredient of policy responses
 - iv. Climate adaptation policy need to be integrated into long-time for

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