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A Survey Of Students' Knowledge Level Of Climate Change In Ghana, West Africa

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Abstract:

The purpose of the study is to contribute to the body of knowledge in the area of climate change by examining respondents' knowledge level on climate change in a survey study of marketing students of Sunyani Polytechnic, using a sample of 175 respondents, selected through convenient sampling method. The paper is based on quantitative research design, a descriptive and cross-sectional study. Primary data was collected using self-designed questionnaire, administered during lecture periods. Percentages, frequencies, chi-square test and cross-tabulation were used in analysing data collected and presented in Tables. Respondents have poor knowledge on climate change and need more education on climate change. Demographic variables are related to knowledge level on climate change. Policy makers should incorporate the findings into their strategies to educate people on climate change.

Key words: Knowledge level; climate change; Kyoto Protocol; demographic variables

1.Introduction

Issues of climatic change have attracted attention in recent times among academics and policy makers in developed and developing economies including Ghana. This attention has resulted from the fact that changes in climate have developmental and health implications. According to Walther et al. (2002) climatic change creates human and ecological unsustainability in an economy. Some of the problems created by climatic change are flooding, short winter, longer, warmer summer and changes in precipitation pattern (Harmeling, 2009).

Hasan and Akhter (2011) indicated that the problems created by climatic change are complex and the solution is both political and scientific. There is the need to educate the citizens on the causes and the solutions strategies to reduce or solve climate change. Enough awareness of climatic change motivates individuals to take responsibility of the issues of climatic change and also to support policy maker's actions to protect the environment.

1.1.Level Of Knowledge And Concern For Climate Change

Researchers (Ashworth et al., 2011; Brechin, 2010; Spence et al., 2010; Mings, 2008; Euro-barometer, 2008; Leiserowitz, 2007; Lorenzoni & Pidgeon, 2006) have written on the level of knowledge, concerns and awareness of climate change at individual countries and in a comparison of nations. The results are not consistent in the literature.

Ashworth et al. (2011) survey reported slightly positive stance (mean=3.04; SD=0.98) of knowledge on climatic change. Less than half (44%) of the respondents were neutral on understanding of climatic change science. According to Ashworth et al. (2011) "about one-third of the respondents felt that they had an understanding of climate change science, where 377 (24%) respondents somewhat agreed and 108 (7%) strongly agreed".

On the issues of climatic change Ashworth et al. (2011) reported that majority of the respondents believed they "possessed a medium level of knowledge or greater, with comparatively more people having more knowledge about climate change, compared to specific issues such as adaptation and mitigation".

Ashworth et al. (2011) reported also that less than half of the respondents (30%) were uncertain on the questions related to knowledge level of climatic change. Few (13%) respondents answered

fewer than two questions correctly, less than half of the respondents answered four or more questions correctly, and less than 2% of people answered more than 6 correctly according to the survey report. The authors concluded that the "results indicate that the information relating to climate change may be poorly understood by many respondents and more education is required".

Spence et al. (2010) established that less than half (31%) of the respondents in their survey were of the view that climate change results totally from human activities, while Most (43%) of the respondents hold the view that climate change results from both human activities and natural processes.

In a survey conducted by Mings (2008), 84% of schools, 92.3% of financial respondents and 76% of Community groups understood the meaning of climate change whereas 100% of the media; 16% of the schools and 24% of community Groups did not understand the meaning of climate change. Majority (90.5%) of schools, most (60%) of the media and less than half (46.2%) of the financial respondents had “limited knowledge” to having “studied some aspects” of climate change.

On the issue of concern for climate change Mings (2008) indicated that concern among schools ranged from being “very concerned” (31.5%); “moderately concerned” (56%) and “not concerned at all” (10%). In the case of community respondents the results indicated “very concerned” (44%), “moderately concerned” (48%) and not “concerned at all” (4%). For the financial respondents, 69.2% were “very concerned” and 23% were “moderately concerned”.

Mings (2008) examined respondent’s knowledge on the effect of climatic change. The results indicated that significant majority (93.5%) of schools, financial respondents (92.3%), all media respondents (100%) and 80% of community group members are aware of the deleterious effect of climatic change on the life of citizens and on the development of the economy. The respondents understand the causes and the effect of climatic change.

The Euro-barometer (2008) report indicated that most (56%) respondents in the survey conducted understand the causes of climate change, while another majority (56%) is aware of the consequences of climate change, with most of the respondents also understanding the strategies of preventing climate change. The report indicates that significant number of the respondents is poorly informed on the issues of climate change. Some respondents (30%) are of the view that Carbon dioxide emissions have insignificant effect on climate change, while 15% of the respondents are indifferent on the effect of carbon dioxide emission on climate change.

In a review by Lorenzoni and Pidgeon (2006) on perception and concern of climate change the following findings were reported. Widespread awareness and concern about environmental issues and climate change. However, climate change is generally considered less important than other personal or social issues. Limited understanding of the causes of, and solutions to, climate change. Perceived negativity and threat of climate change, although it remains a psychologically, temporally and spatially distant risk. Risks of climate change acknowledged at the same time as benefits. Some benefits are linked to climate change itself; others are felt to derive directly from the technologies and actions that cause climate change. Some evidence of willingness to address the perceived threats of climate change, mainly through contextually circumscribed and defined measures. Ascription of responsibility to take forward feasible measures to address climate change mainly to government, although this may be mediated by the degree of trust people have within any particular country.

Bibbings (2004) survey indicated that most respondents (66%) were concerned about climate change and that climate change significantly poses developmental challenge. Significant majority (85%) of the respondents consider changing weather pattern as an evidence of climate change issue.

1.2.Sources Of Information On Climatic Change

Sources of information of climate change have been documented in the literature by researchers (Ashworth, et al., 2011; Pidgeon, 2010). According to Ashworth et al. (2011) the main sources in their survey are documentaries/films (n=191, 15%) followed by TV programs (n=157, 13%), TV news (n=156, 13%) and internet searches (n=141, 11%).

1.3.Determinants Of Climate Change Knowledge And Concern

Some studies (Hasan & Akhter, 2011; Leviston & Walker, 2011; King et al., 2009; Hossain, 2008; Eurobarometer, 2008; Udwal, 2007; Patchen, 2006; Bibbings, 2004) have also examined the determinants of citizen’s knowledge level of climatic change. The findings in the literature have not been conclusive.

According to Hasan and Akhter (2011) knowledge level of respondents on climate change is a function of various variables (formal education, media access, personal or family experiences of environmental problems). Patchen (2006) reported that demographic and social variables such as age, sex, education, income level and personality type influence the knowledge level of citizens on climatic change.

Bibbings (2004) reported in a survey that views of respondents on climate change is not a function of the presence of children in a household and that the presence or absence of children does not matter. According to Eurobarometer (2008) report, men, younger people, people with many years of education and people at the left side of political ideologies are more concern with climate change.

1.4.Problem Statement/Justification/Significance

Many economies including Ghana are faced with the issues of climate change. There are changing weather patterns in various economies including Ghana. For example, the onset of rainfall is delayed in Ghana and the expected volumes of rain are not realised. The researchers intend to examine the knowledge level of Students in relation to climate change.

In the knowledge of the researchers no such empirical study has been conducted in the study area of Sunyani Polytechnic. The study fills in the literature gap. The findings of the paper provide further understanding to the theories of climate change by providing answers to the research questions raised in the paper.

The findings also provide policy guide to policy makers in the area of climate change as it provide information on the knowledge level of the students towards climate change. Future researchers doing research in the area of climate change will also find the findings useful as reference material.

1.5.Global/Specific Objectives

The aim of the researchers is to contribute to the body of knowledge that exists in the area of climate change by examining students’ knowledge level of climate change. The paper in specific terms:

- Identifies the effect of demographic and socio-economic variables on knowledge of climate change,

- Determine the level of knowledge on climate change among the respondents,
- Assess source of knowledge on climate change.

1.6. Research Questions/Hypotheses

The paper is exploratory and descriptive study and as such answers are provided to these research questions.

- What is the knowledge level of respondents on climate change and what is the source of the knowledge?
- What are the factors influencing knowledge attainment?

The paper is based on these assumptions.

- Respondents are not well informed on the causes of climate change.
- Demographic and socio-economic variables influence knowledge attainment on climate change.

1.7. Limitations/Delimitations

The paper is cross-sectional and descriptive survey that does not allow causality to be examined. The findings may suffer external validity since respondents were selected through convenient sample method. Older articles in the 1990s are not reviewed since the findings are not current and issues might have changed.

2. Methodology

The research is cross-sectional, descriptive and quantitative survey research design using sample of 175 students of marketing department. They were selected through convenient sample method. Primary data on knowledge on climate change was collected using self-designed questionnaire, designed based on the review of related articles. The questionnaires were administered during lectures hours. Primary data obtained was analysed using frequencies, percentages, Chi-square, cross-tabulations and presented in tables. The SPSS version of 16.0 was used.

3. Results And Discussion

This section of the paper contains the results and discussion.

3.1. Demographic Characteristics Of Respondents

The results on demographic variables in the survey are shown in Table 1. Most of the respondents were males 107(61.1%). Majority 98(56.0%) of the respondents are in the age group of 23-27 years followed by respondents 74(42.3%) in the age group of 18-22.

Most 66(37.7%) of them are from Ashanti region followed by respondents 44(25.1%) respondents from the Brong Ahafo. Majority 98(56.0%) of the respondents were in second year. Significant majority 154(88.0%) were Christians. Most 100(57.1%) respondents consider their family income status to be medium. Respondents with individual personality type dominate in the sample 87(49.7%). The rest of respondents profiles are shown in Table 1.

Variables	Frequency	Percentages (%)
Gender		
Male	107	61.1
Female	66	37.7
Missing responses	2	1.1
Total	175	100
Age		
Less than 18	1	0.6
18-22	74	42.3
23-27	98	56.0
28-32	1	0.6
Above 32	1	0.6
Total	175	100.0
Region		
Brong Ahafo	44	25.1
Ashanti	66	37.7
Western	14	8.0
Eastern	11	6.3
Volta	6	3.4
Greater Accra	11	6.3
Central	5	2.9
Northern	6	3.4
Upper east	4	2.3
Upper west	7	4.0
Missing response	1	0.6

Total	175	100.0
Year in school		
First year	75	42.9
Second year	98	56.0
Missing responses	2	1.2
Total	175	100.0
Religion		
No religion	1	0.6
Christian	154	88.0
Muslim	17	9.7
Other religion	1	0.6
Missing responses	2	1.1
Total	175	100.0
Family income status		
Low	19	10.9
High	38	21.7
Medium	100	57.1
I don't know	18	10.3
Total	175	100.0
Personality type		
Individual	87	49.7
Collectivistic	71	40.6
I don't know	17	9.7
Total	175	100.0
Father's education		
No Post Secondary	34	19.4
Post Secondary	71	40.6
Tertiary	70	40.0
Total	175	100.0
Mother's education		
No Post Secondary	78	44.6
Post Secondary	73	41.7
Tertiary	24	13.7
Total	175	100.0
Place of upbringing		
Rural	63	36.0
Urban	103	58.9
I don't know	8	4.6
Missing responses	1	0.6
Total	175	100.0

*Table 1: Distribution Of Responses On Demographic Variables
(Source: Field Survey, April, 21, 2013)*

3.2. Knowledge Level On Climate Change

Respondent's knowledge level on climate change was examined. Respondents were asked if they understand the term climate change. The results are shown in Table 2.1. Significant majority (81.1%) indicated that they understand the term climate change. This is consistent with the findings of Ashworth et al. (2011) study in which most of the respondents felt they understood climate change.

Responses	Frequency	Percentage (%)
Yes	142	81.1
No	17	9.7
I don't know	13	7.4
Missing responses	3	1.7
Total	175	100.0

Table 2: Responses On Whether Respondents Understand The Term Climate Change
(Source: Field Survey, April, 2013)

Majority 134(76.6%) of the respondents are aware that climate change is a major global problem. Few 11(6.3%) respondents did not consider climate change as a major global problem. Small number of respondents 27(15.4%) played neutral. There were 3(1.7%) missing responses.

Majority 63(36%) of the respondents consider climate change to be caused by natural factors alone. The results are shown in Table 2.2. The results in totality indicate that respondents do not understand the causes of climate change since climate change is caused by both natural and human factors.

This support the findings of Ashworth et al. (2011) survey in which the respondents totally did not understand the causes of climate change. The findings are contrary to the works of researchers such as Venables et al. (2010); Mings (2008); Eurobarometer (2008) which reported that respondent understand the causes of climate change.

Cause	Frequency	Percentage (%)
Natural	63	36.0
Human induced	42	24.0
Both (Natural & Human)	61	34.9
Missing responses	9	5.1
Total	175	100.0

Table 3: Responses On The Causes Of Climate Change
(Source: Field Survey, April, 2013)

Respondent's knowledge on policies to reduce climate change issues were examined in the survey. The results are shown in Table 4. On five international policies identified in the survey on climate change most respondents have heard of only two of the policies. These are Reduced Emissions from Deforestation and Degradation (REDD) 114(65.1%) and the Millennium Development Goals (MDGs) 85(48.6%). Majority of the respondents played neutral on the other policies. The results again indicate that respondents do not have enough knowledge on climate change. They are less informed on policies to reduce climate change.

Policies	Strongly agree/agree (%)	Neutral (%)	Strongly disagree/disagree (%)	Missing response (%)	Total (%)
Reduced Emissions from deforestation and degradation(REDD)	114(65.1%)	43(24.6%)	18(10.3%)	n.a	175(100.0%)
Kyoto Protocol (KP)	44(25.7%)	100(57.1%)	30(17.1%)	1(0.6%)	175(100.0%)
United Nations Framework Convention On Climate Change (UNFCCC)	70(40%)	78(44.6%)	25(14.3%)	2(1.1%)	175(100.0%)
The millennium Development Goals (MDGs)	85(48.6%)	70(40.0%)	18(10.3%)	2(1.1%)	175(100.0%)
Clean Development Mechanism (CDM)	72(41.1%)	85(48.6%)	18(10.3%)	n.a	175(100.0%)

Table 4: Policies On Climatic Change
(Source: Field Survey, April, 2013)

Some countries have signed the Kyoto Protocol whereas other countries have not. Respondent's knowledge level on countries that have signed the Kyoto Protocol was investigated in the survey.

The results are showed in Table 5. Only five countries were used in the study including the country of the respondents. Most of the respondents played neutral. All the countries in the survey except United States have signed and rectified the Protocol. United

States have only signed, but not rectified the Protocol yet. The results show that respondents do not have enough information on climate change.

Policies	Strongly agree/agree (%)	Neutral (%)	Strongly disagree/disagree (%)	Missing response (%)	Total (%)
United States	37(21.1%)	115(65.7%)	22(12.5%)	1(0.6%)	175(100.0%)
Russia	31(17.7%)	123(70.3%)	19(10.9%)	2(1.1%)	175(100.0%)
Australia	33(18.9%)	117(66.9%)	24(13.8%)	1(0.6%)	175(100.0%)
China	30(17.2%)	114(65.1%)	29(16.6%)	2(1.1%)	175(100.0%)
Ghana	35(20.0%)	110(62.9%)	29(16.6%)	1(0.6%)	175(100.0%)

Table 5: Countries That Have Not Signed The Kyoto Protocol
(Source: Field Survey, April, 2013)

3.3.Sources Of Information On Climate Change

How knowledge on climate change is obtained by respondents was assessed in the survey. The results are shown in Table 6. The three most important sources of information according to the respondents are educational institutions (83.5%); media (75.4%) and internet (74.3%). The ranking order is inconsistent with what Ashworth et al. (2011) reported in their survey in which documentation was the main source of information.

Source of Knowledge	Strongly agree/agree (%)	Neutral (%)	Strongly disagree/disagree (%)	Missing response (%)	Total (%)
School/educational institutions	146(83.5%)	22(12.6%)	7(4.0%)	n.a	175(100.0%)
Other people (friends, family)	109(62.3%)	44(25.1%)	22(12.6%)	n.a	175(100.0%)
Some form of media (TV, News, Poster)	132(75.4%)	30(17.1%)	12(2.3%)	1(0.6%)	175(100.0%)
Internet	130(74.3%)	31(17.7%)	13(7.5%)	1(0.6%)	175(100.0)

Table 6: Sources Of Knowledge On Climate Change
(Source: Survey, April, 2013)

Majority 103(58.9%) of the respondents indicated that they have learnt about climate change in various subjects they have studied in school. The results are show in Table 7. Most respondents learn about climate change yet majority of them do not know the causes of climate change.

Responses	Frequency	Percentage (%)
Yes	103	58.9
No	54	30.9
I don't know	15	8.6
Missing responses	3	1.7
Total	175	100.0

Table 7: Responses On Whether Respondents Have Learnt About Climate Change In Their Subjects Of Study
(Source: Field Survey, April, 2013)

3.4.Results On The Link Between Demographic Variables And Knowledge Level Of Respondents On Climate Change

The association between demographic variables and knowledge level of respondents was examined using chi-square test. The main demographic variables used in the analysis are gender; age; region; religion; family income status; personality type; parents educational level and place of up-bringing.

3.4.1.Gender And Knowledge Level

There is a relation between gender and respondents knowledge on the situation of climate change as a global problem (chi-square=6.254; p=0.044). More males (81.9%) than females (70.8%) consider climate change to be a major global problem. Gender influences respondent knowledge level on international policies on climate change (chi-square=9.979; p=0.041). More males (52.90%) than females (41.50%) are aware that a millennium development goal (MDGs) is one of the international policies on climate change.

Gender affects knowledge on countries that have signed the Kyoto Protocol in relation to United States (chi-square=11.296; p=0.023) and Russia (chi-square=9.799; p=0.044). More females (23.1%) than males (18.7%) are unaware that United States has signed the Protocol. More males (20.6%) than females (10.9%) are unaware that Russia has signed the Protocol.

3.4.2.Age And Knowledge Level On Climate Change

There is an association between age and respondents knowledge on the situation of climate change as a global problem (chi-square=17.089; p=0.029). More respondents in the age groups of 28-32 and above 32years (100%) than the respondents in other age groups consider climate change to be a major global problem.

Age influences respondent knowledge level on international policies on climate change in relation to policies such as REDD (chi-square=51.996; $p=0.000$); UNFCCC (chi-square=36.881; $p=0.002$); MDGs (chi-square=66.454; $p=0.000$) and CDM (chi-square=65.918; $p=0.000$). Respondents in the age group 23-27 are more (67.40%) aware than the respondents in other age groups that REDD is one of the international policies on climate change.

Respondents in the age group 18-22years are more (44.60%) aware than the respondents in other age groups that UNFCCC is one of the international policies on climate change. Respondents in the age groups 28-32years and above 32years are more (100%) aware than the respondents in other age groups that MDGs is one of the international policies on climate change.

Respondents in the age group above 32years are more (100%) aware than the respondents in other age groups that CDM is one of the international policies on climate change. Age affects knowledge on countries that have signed the Kyoto Protocol in relation to United States (chi-square=28.073; $p=0.031$); Russia (chi-square=30.921; $p=0.014$); Australia (chi-square=37.613; $p=0.002$) and Ghana (chi-square=25.845; $p=0.056$). Respondents in the age group 18-22years are more (29.8%) unaware than the respondents in other age groups that United States has signed the Protocol.

Respondents in the age group 18-22years are more (23%) unaware than the respondents in other age groups that Russia has signed the Protocol. Respondents in the age group 18-22years are more (20.3%) unaware than the respondents in other age groups that Australia has signed the Protocol. Respondents in the age group 18-22years are more (29.8%) unaware than the respondents in other age groups that Ghana has signed the Protocol.

Age significantly influences sources of information on climate change in relation to educational institutions (chi-square=44.452; $p=0.000$); other people (friends and family) (chi-square=48.577; $p=0.000$); media (chi-square=52.081; $p=0.000$) and internet (chi-square=36.829; $p=0.002$).

Respondents in the age group 28-32years more (100%) than the respondents in other age groups learn about climate change in educational institutions. Respondents in the age group 28-32years are more (100%) than the respondents in other age groups that learn about climate change from friends and family members. Respondents in the age group 28-32years are more (100%) than the respondents in other age groups that learn about climate change in the media. Respondents in the age group 28-32years are more (100%) than the respondents in other age groups that learn about climate change from the internet.

3.4.3. Region And Knowledge Level

There is statistical association between region of respondents and respondents subjective understanding of the term climate change (chi-square=35.090; $p=0.009$). Respondents from Eastern region and Upper West region more (100%) indicated they understand the term climate change than the respondents from other regions. Region influenced the number of respondents learning about climate change in their subjects (Chi-square=28.484; $p=0.055$). Respondents from Upper West region more (75%) indicated they learn about climate change in their subjects than the respondents from other region.

Region significantly affects the source of information on climate change in relation to internet (chi-square=55.167; $p=0.021$). Respondents from Ashanti region more (81.80%) learn about climate change from the internet than respondents from other regions. This is followed by respondents from Brong Ahafo (81.4%).

3.4.4. Religion And Knowledge Level

Religion has statistical relationship on respondents' awareness of climate change as a major global problem (chi-square=17.089; $p=0.009$). Respondents with other religion more (100%) consider climate change as a major global problem than respondents who are Christians and Muslim.

Religion is statistically linked with awareness of international policies on climate change in relation to REDD (chi-square=40.230; $p=0.000$); UNFCCC (chi-square=32.742; $p=0.001$); MDGs (chi-square=61.583; $p=0.000$); CDM (chi-square=66.152; $p=0.000$). Muslim respondents are more aware of REDD (82.3%) and UNFCCC (52.9%) than other respondents. Respondent with other religion are more aware of MDGs (100%) and CDM (100%) than other respondents who were Christians and Muslims.

Religion is associated statistically with respondent's knowledge on countries that have signed the Kyoto Protocol in relation to United States (chi-square=24.721; $p=0.016$); Russia (chi-square=32.593; $p=0.001$); Australia (chi-square=38.180; $p=0.000$) and Ghana (chi-square=23.910; $p=0.021$). Muslim respondents are more unaware that United States; (29.4%); Russia (35.3%); Australia (29.4%); China (29.4%) and Ghana (41.1%) have signed the Kyoto Protocol.

Religion significantly influences sources of information on climate change in relation to educational institutions (chi-square=41.461; $p=0.000$); other people (friends and family) (chi-square=46.178; $p=0.000$); media (chi-square=50.892; $p=0.000$) and internet (chi-square=26.126; $p=0.010$). Respondents with other religion more learn about climate change from educational institutions (100%); other people (100%); media (100%) and internet (100%) than respondents with other faiths.

3.4.5. Family Income Status And Knowledge Level

Family income status is related to awareness of CDM as international policy (chi-square=23.511; $p=0.024$) and source of information in relation to educational institution (chi-square=22.038; $p=0.037$). Respondents with medium family income are more (45%) aware of CDM as international policy on climate change than other respondents in other income groups such as low income group (31.60%); high income group (36.8%) and those who do not know their income group (38.9%). Respondents (89%) with medium family income status learn more about climate change from educational institutions than respondents in other family income group.

3.4.6. Personality Type And Knowledge Level

There is an association between personality type and the awareness of climate change as a major global problem (chi-square=10.989; $p=0.027$) and policy such as REDD (chi-square=16.920; $p=0.031$). Respondents with collectivistic personality

more consider climate change as a major global problem (88.7%) whereas those with individualistic type are more aware of REDD (71.3%) as international policy on climate change.

3.4.7. Father's Educational Level And Knowledge Level

Father's educational level is related to awareness of international policy on climate change in relation to REDD (chi-square=14.043; p=0.081) and source of information in relation to media (chi-square=16.216; p=0.039). Respondents whose fathers have no post secondary education are more aware of REDD policy (76.5%) on climate change whereas respondents whose fathers have tertiary education learn about climate change from the media (81.1%) more than respondents whose fathers have no post secondary education and post secondary education.

3.4.8. Mother's Educational Level And Knowledge Level

Mother's educational level is linked to awareness of international policy on climate change in relation to CDM (chi-square=14.647; p=0.066). Respondents whose mothers have post secondary educational are more aware of CDM policy (52%) on climate change.

3.4.9. Place Of Upbringing And Knowledge Level

Place of upbringing has statistical relation between awareness of climate change as major global problem (chi-square=14.837; p=0.005); REDD as policy on climate change (chi-square=14.477; p=0.07); countries that have signed the Kyoto Protocol in relation to Russia (chi-square=15.397; p=0.052); Australia (chi-square=17.352; p=0.027) and Ghana (chi-square=26.798; p=0.001). There is a link between place of upbringing and sources of information on climate change (chi-square=13.944; p=0.083) and understanding of the term climate change (chi-square=7.859; p=0.097).

Respondents who were raised in rural areas more (84.1%) consider climate change as a major global problem than those who were raised in urban (79%) and those who do not know where they were raised (25%). Respondents (67%) who were raised in urban areas are more aware of REDD as a policy on climate change than other respondents raised in rural areas (63.5%) and those who do not know where they were raised (50%).

Respondents (57.2%) who do not know where they were raised are more unaware that Russia has signed the Kyoto Protocol than those raised in rural (17.5%) and urban (15.7%) areas. Respondents (50%) who do not know where they were raised are more unaware that Australia has signed the Kyoto Protocol than those raised in rural (11.1%) and urban (21.6%) areas. Respondents (25%) who do not know where they were brought up are more unaware that Ghana has signed the Kyoto Protocol than those who were raised in rural (15.8%) and urban (22.6%) areas.

On the sources of information, respondents (85.7%) who were raised in rural areas more learn about climate change from educational institutions than those who were brought up in urban (83.5%) areas and those who do not know where they were brought up (62.5%). Respondents (86.1%) raised in urban areas more indicated that they understand the term climate change than those raised in rural (80.6%) and those who do not know where they were brought up (50%).

The findings on the relationship between demographic variables and the knowledge level on climate change are consistent with the findings of researchers such as Akhter (2011), Patchen (2006) and the report of Eurobarometer (2008). Patchen (2006) indicated that demographic and social variables such as age, sex, education, income level and personality type influence the knowledge level of people on climatic change.

4. Conclusion

The knowledge level of respondents on climate change in the survey is poor. Respondent do not fully understand the causes of climate change, the policies on climate change and the countries that are signatories to the Kyoto Protocol on climate change, including their own country. Demographic variables significantly influence respondents' knowledge level on climate change.

The findings of the study are indication that more education on climate change is needed in order to help solve the problems of climate change such as poverty, water scarcity, flooding and food insecurity. Policy makers should incorporate the findings in their strategies to educate people on climate change.

Future studies should look at the issues of causality using structural models for analysis since the current study is descriptive. Sample should be taken from other departments in the study area for more comparative analysis to ensure more generalisation of the findings in future studies.

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