KNOWLEDGE ATTITUDES AND PRACTICE STUDY ON CLIMATE CHANGE

Japan- Caribbean Climate Change Project

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Belize

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Japan-Caribbean
Climate Change Partnership

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1.0 Executive Summary

The Knowledge Attitudes and Practice Survey (KAP) on Climate Change was commissioned by the United Nations Development Programme through the Japan-Caribbean Climate Change partnership which is designed to strengthen the capacity of countries in the Caribbean to invest in climate change mitigation and adaptation technologies as prioritized in their Nationally Appropriate Mitigation Actions (NAMAs) and National Adaptation Plans (NAPs).

The KAP Survey was conducted to inform the development of a communication strategy on climate change targeting the general public. The KAP will assist in identifying gaps in knowledge, attitudes and behaviours that can be targeted as well as priority target groups, messages and channels that should be included in the strategy.

The KAP measured respondents general knowledge on climate change including their understanding of what climate change is, what causes climate change and how climate change is impacting their community. It also measured respondents attitudes to climate change, specifically, their level of concern about the issue, their perceptions on the importance of various actions that can be taken, perception on actions being taken at all levels and their willingness to take action to address climate change. The survey also attempted to identify actions being taken by the community to address climate change as well as barriers to action. Finally, the KAP survey measured media use, prominence of climate change stories in the media and most effective ways to reach communities with messages.

The study was conducted in 27 communities utilizing a mix of quantitative and qualitative methodologies. A survey was conducted in 18 communities across Belize using stratified random sampling and a quota sampling scheme to identify some 600 households to be targeted. Additionally, Focus group discussions were held in 9 communities based on recommendations from stakeholders implementing programmes on climate change. These included ; coastal and low lying communities vulnerable to climate change, communities that depend on agriculture as their main source of income, communities that depend on fishing as their main source of income, communities that currently have climate change initiatives/projects undergoing, communities that depend on tourism as their main source of income.

A little under 45% of homes are situated near rivers, coastline, low-lying areas or on steep incline. These homes are deemed more vulnerable to climate related hazards than the 55% that have indicated that their homes are situated on flat inland areas. The majority of homes, 59%, are owned by respondents and the majority (77%) are constructed with zinc roofing while 35% have outer walls of wood, 36.3% have outer walls of wood and concrete and 24.3% have outer walls of concrete.

An interesting finding is that the majority of households, 76.6%, either do not have or are not sure they have insurance. Similarly, 77% either do not have insurance against climate related hazards or are not sure if their insurance covers climate related hazards. This is significant considering the fact that 45% of homes are situated in vulnerable areas prone to climate related hazards.

The majority of respondents, 89.1% have heard the term climate change. Only 10.9% of respondents have never heard the term climate change before. The majority of respondents lack comprehensive knowledge on climate change.

The most common responses as it relates to respondents understanding of climate change are changes in weather patterns and weather conditions (22.1% of respondents), changes in temperature (19.8% of respondents) and extreme heat (17.9% of respondents). Other popular responses include; changes in sea level (14%), changes in the environment (11.3%) and global warming (6.3%). However, although respondents were able to describe changes associated with climate change they were unable to properly define climate change. They understand that it brings about specific changes but the specific definition of what brings about these changes was not provided by respondents. Greenhouse effect caused by the increasing concentration of carbon dioxide, and other greenhouse gases in the atmosphere was not a response provided by any respondent in the survey.

The majority of respondents believe that their community is being affected by climate change. 83.4% of respondents indicate that their community is being affected by climate change.

The most common impacts of climate change on their communities, noted by respondents, include; changing weather patterns (91.9%), stronger and more frequent storms (73.1%), Increase in air temperature (73.6%) and flooding (71.7%).

The majority of respondents are able to associate the more prominent changes they are seeing in their communities to climate change. 94.7 % of respondents associate changing weather patterns with climate change. 89% of respondents associate stronger and more frequent hurricanes with climate change, 87.4% associate increase in air temperatures with climate change and 85.5% associate flooding with climate change.

However, a significant number of respondents were unable to associate several other changes with climate change. 27.3% of respondents do not associate increase in sea surface temperature and coral bleaching with climate change. 21.8% do not associate sea level rise with climate change. 36% do not associate erosion along the coast with climate change while 36.5% do not associate landslides with climate change, 34.5% do not associate decrease in fish stock with climate change and 38.3% do not associate melting of the ice caps at the poles with climate change.

Although a significant percentage of respondents are aware of some of the impacts associated with climate change and are able to identify some of these impacts within their communities, another major gap in knowledge appears to be a comprehensive understanding of what causes climate change. From the variables presented, poor industrial practices was the most commonly identified cause of climate change. However, only 54.8% identified poor industrial practices as a cause of climate change. Deforestation was identified by 48.7% of respondents followed by burning of fossil fuels (48%), improper waste disposal (47.4%), transportation (46%) and natural occurrence (41.7%). Only 32.2% of respondents identified electricity generation as a cause of climate change while 26.3% feel that it is an act of the creator. This is an important knowledge gap to address as communities may not feel that they are engaged in any actions to contribute towards climate change and may not be motivated to take action if they are not able to see themselves as part of the problem or solutions to the issue.

The majority of respondents (90.3%) are somewhat concerned or very concerned about climate change. Only 9.7% of respondents indicated that they are not concerned or are not sure how they feel about the issue.

It is not surprising that respondents identify increase in public awareness as the most important action in helping communities to prevent the impact of climate change. With increase public awareness, comprehensive knowledge can increase thus increasing the general public's awareness of actions they can take to prevent or lessen the impact of climate change.

A significant percentage of respondents do not feel that action is being taken at any level to address the impact of climate change. 49% of respondents strongly disagree or disagree that community leaders are taking action, 44.7% strongly disagree or disagree that central government is taking action and 46.6% strongly disagree or disagree that community members are taking action. Only 29.4% agree or strongly agree that community leaders are taking action while 33.1% strongly agree or agree that central government is taking action and 32.3% agree that community members are taking action.

An encouraging finding is that just under 60% of respondents indicate that they are prepared to do whatever it takes to help preserve the environment. Equally encouraging is that respondents do not agree that there is nothing a small country like Belize can do about climate change. The majority of respondents (66.7%) either disagree or strongly disagree with this statement.

Most respondents (51.1%) feel that the government is responsible for addressing climate change. 31.0% also feel that everyone is responsible for addressing climate change. Interestingly, only a small percentage of respondents (3.4%) feel that businesses/industries should be responsible for taking action although poor industrial practices was cited as the main cause of climate change in Belize

Most respondents (59.8%) are very interested in finding out more about climate change. 32.1% are somewhat interested while 5% are not interested in finding out more about climate change.

Based on the findings, very little action is being taken in communities to prevent or lessen the impact of climate change. Over 60% of respondents indicated that they or their communities did not take any actions or were not sure if they or their communities had taken action.

Respondents were able to identify some actions that government has taken on climate change. However, with the exception of increase public awareness (60.2%), all others actions received low positive responses by respondents. 42.9 % of respondents feel that government has implemented early warning systems for health related impacts and flood warning systems.

The main reasons why communities have not taken action are that they do not have enough information and are not aware of what actions to take. 46.0% of respondents indicated that they do not have enough information while 40.4% indicated that they do not know what actions they should take to prevent or lessen the impact of climate change

Just over 60% of respondents are exposed to information on climate change. However, only 39.2% watch, listen to or read stories on climate change often. 26.8% do so occasionally while 31.5% rarely or never listen to, watch or read stories on climate change.

Television and radio are the two main sources of information on climate change for respondents. The majority of respondents (66.5%) indicated that they receive information on climate change through the television while 16.1% receive information via radio.

2.0 Background Information

2.1 Global Context

The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable periods. Climate change continues to represent one of the greatest threats to the global environment, society and the economy. All of the evidence, including air temperature, ocean temperature, melting of snow and sea level rise indicates a rise in the average global temperature. While there are many natural occurrences impacting the average global temperature, human activity continues to be a main contributing factor to climate change as human activity continues to contribute towards an increased emission of greenhouse gases.

According to the UN, from 1880 to 2012, average global temperature increased by 0.85°C. Oceans have warmed, the amounts of snow and ice have diminished and sea level has risen. From 1901 to 2010, the global average sea level rose by 19 cm as oceans expanded due to warming and ice melted. The Arctic's sea ice extent has shrunk in every successive decade since 1979, with 1.07 million km² of ice loss every decade. The UN further purports that given current concentrations and on-going emissions of greenhouse gases, it is likely that by the end of this century, the increase in global temperature will exceed 1.5°C compared to 1850 to 1900 for all but one scenario. The world's oceans will warm and ice melt will continue. Average sea level rise is predicted as 24 – 30cm by 2065 and 40-63cm by 2100. Most aspects of climate change will persist for many centuries even if emissions are stopped. Global emissions of carbon dioxide (CO2) have increased by almost 50 per cent since 1990 with emissions having grown more quickly between 2000 and 2010 than in each of the three previous decades.

Without action, the world's average surface temperature is projected to rise over the 21st century and is likely to surpass 3 degrees Celsius this century—with some areas of the world expected to warm even more. The poorest and most vulnerable people are being affected the most. However, the UN affirms that it is still possible, using a wide array of technological measures and changes in behaviour, to limit the increase in global mean temperature to two degrees Celsius above pre-industrial levels. Major institutional and technological change will give a better than even chance that global warming will not exceed this threshold.

In 2015, over 150 world leaders came together under the U.N. Framework Convention on Climate Change (UNFCCC) to ratify the Paris Agreement. Under the Paris Agreement, participating countries reaffirmed the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees.

Participating countries agreed to take specific actions to make Nationally Determined Contributions (NDCs) and take domestic actions aimed at achieving those national targets, report regularly on their emissions and progress made in implementing and achieving their NDCs and to develop new NDCs every five years. Developed countries agreed to support the efforts of developing countries to address climate change including mobilization of resources to support global and national actions.

The Paris Agreement provides the framework for implementation of the Sustainable Development Goals (SDGs) which was adopted in 2015 and came into force in 2016. Over the next fifteen years, with these new

Goals that universally apply to all, countries will mobilize efforts to end all forms of poverty, fight inequalities and tackle climate change, while ensuring that no one is left behind.

The SDGs build on the success of the Millennium Development Goals (MDGs) and aim to go further to end all forms of poverty. The new Goals are unique in that they call for action by all countries, poor, rich and middle-income to promote prosperity while protecting the planet. They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and addresses a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection. Goal 13, which is specific to climate change, calls for countries to:

- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries;
- Integrate climate change measures into national policies, strategies and planning;
- Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning;
- Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible; and
- Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and Small Island developing States, including focusing on women, youth and local and marginalized communities.

2.2 National Context

In October 31st, 1994, Belize ratified the UNFCCC and agreed to subsequent treaties and protocols which mandate countries to take specific measures to reduce greenhouse gas emission.

According to the NDCs for Belize, 2016, a recent systematic country diagnostic by the World Bank Group indicates that Belize is one of countries in the world that is mostly affected by weather related events and other natural hazards. As such, Belize incurs annual losses of close to 4% of GDP due to natural disasters.

The report further indicates that according to the UNDP Country Profiles studies, an increase in air temperature ranging from 2oC - 4oC is projected by 2100 for Belize. Similar results were obtained from the Regional PRECIS model at 25 km resolution. Likewise a general decrease in annual rainfall of about 10% is projected by 2100. Other expected impacts include increased erosion and contamination of coastal areas, sea level rise, flooding and an increase in the intensity and occurrence of natural hazards such as hurricanes. Many of the effects of climate change are already being felt on the low lying coastal zone and are expected to have significant impacts on many environmental, physical, social and economic systems in Belize.

In the agriculture sector, Belize expects a projected loss of production within the range of 10% to 20% which could lead to million dollars in lost revenue by the year 2100 (UNDP, 2009. Belize and Climate: The Cost of Inaction). The fisheries sector is also under threat from warmer sea surface temperatures, ocean acidification, sea-level rise, and extreme weather events. A decline in this industry can significantly affect

Belize's food security as well as our GDP. It would also affect over 3,500 licensed fishers, which could lead to an annual loss of approximately USD 12.5 million per year.

The report highlights that the Government of Belize has noted that, if these issues are not addressed, climate change will be considered as the single major threat to food and nutrition security, employment and economic prosperity and will obliterate many attainments that have been made towards achieving sustained development within the country.

Belize has developed several policy frameworks over the last decade to respond to these issues. These include: (1) Horizon 2010-2030, (2) National Energy Policy Framework, (3) Sustainable Energy Action Plan 2014-2033, (4) National Climate Resilience Investment Plan 2013, (5) Growth and Sustainable Development Strategy 2016-2019 and (6) the National Climate Change Policy, Strategy and Action Plan 2015-2020.

In response to the Paris Agreement, Belize specifically submits that over the next five years it will take action to address the following NDCs:

- Protection of forest reserves and sustainable forest management
- Reduction of fuel wood consumption - by 27% - 66%,
- Protecting and restoring mangrove forests.
- Sustainable Energy Strategy and Action Plan - 85% renewable energy by 2030 by implementing hydropower, solar, wind and biomass, and reduction of transmission and distribution losses.
- Transport Sector - Develop Transport Policy and Implement Transport Master Plan.
- The National Solid Waste Management Policy (NSWMP) - Develop and Implementation of the Strategy and Plan to operationalize the NSWMP.

2.3 Knowledge, Attitudes and Practice Findings from other studies

Several studies, reports and research papers were reviewed for background information. However, two studies relevant to this research are discussed in this section. The Belize Marine Conservation and Climate Change Adoption Project (MCCAP) KAP Survey provides relevant supporting evidence of Knowledge, attitudes and practices in 12 fishing communities across Belize.

The Belize Climate Change Survey, 2005, prepared for the Climate Change Center, provides a sound baseline for several indicators measured in the 2016 KAP on Climate Change. Although the sample population is a bit different, the findings from the 2005 KAP study provides a good picture of the general public's current and past knowledge, attitudes and behaviours as it relates to climate change. Section 3.2 attempts to compare some indicators from the 2005 and 2016 KAP studies.

The MCCAP KAP Study sampled 353 fishers, 2150 households and 97 policy actors. The study found that the mean knowledge score on climate change among fishers was 50% while the mean knowledge score among households was 45.6% and 59.6% among policy actors. However when further analysed, 38.2% of fishers had low knowledge on climate change while 51.1% of households and 16.7% of policy actors, respectively, had low knowledge. Just under 62% of fishers had moderate to high knowledge while less than 50% of households had moderate to high knowledge about climate change.

Mean attitude score among fishers was 50.1% while mean attitude score among households was 45.9% and 66.8% among policy actors. 58.4% of fishers had a moderate or high attitude score towards climate change while only 46.3% of households had a moderate or high attitude score.

As it relates to practice, mean score among fishers was 45.9% while mean score among households was only 27.0%. Just under 50% of fishers scored moderate to high as it relates to practice while only 17.6% of households scored moderate to high scores.

The Belize Climate Change Survey, 2005, used a quota sampling scheme to identify 448 members of the general public, public and private sector, international donor agencies and the media to whom the survey was administered. The survey covered eight (8) urban communities. The following is a summary of the major findings. These are discussed in more details further in the study in an attempt to capture current changes in knowledge, attitudes and practices.

- 26% of the respondents do not know what the term 'climate change' means. The rate is higher for inland households compared to coastal ones;
- As expected, the level of knowledge increases with higher education;
- Among the different sectors interviewed, the general public had the highest rate in lack of climate change knowledge;
- Most respondents define the term 'climate change' as 'changes in weather';
- Land use change/land clearing/deforestation and industrial processes and solvents were considered as the most important factors contributing to climate change;
- Only 43% of the respondents consider Belize as extremely vulnerable to the impacts of climate change;
- An overwhelming 95% of the respondents considered that Belize is not prepared to handle extreme climate changes. The major reason was due to financial resources;
- Respondents agree that there is an urgent need for mass public awareness on climate change issues;
- Television is the most widely used medium for knowledge in climate change;
- 46% of the government ministries/departments claim that the current policies/strategies to address climate change are not adequate. In fact, most of them indicated that their ministry/department is not giving climate change the required importance;
- 63% of the private institutions said they have been economically impacted by climate change. These companies have suffered from a slow down in their business. An impressive 61% of the private entities voiced that they currently do not participate in the development of policies or strategies because, in most cases, they are not invited;
- Most of the international lending/donor institutions indicated that they have funds available for climate change issues. There are currently some funds available that have not been utilized;
- 55% of the participating media do not include stories that deal with climate change because there is not sufficient flow of information from the relevant institutions. In fact, most of these agencies get their information from the internet.

2.4 Background to the Study

The KAP Survey was conducted to inform the development of a communication strategy on climate change as part of the Japan- Caribbean Climate Change Partnership (JCCCP). The KAP will assist in identifying gaps in knowledge, attitudes and behaviours that can be targeted as well as priority target groups, messages and channels that should be included in the strategy.

The KAP measured respondents general knowledge on climate change including their understanding of what climate change is, what causes climate change and how climate change is impacting their community. It also measured respondents attitudes to climate change specifically their level of concern about the issue, their perceptions on the importance of various actions that can be taken, perception on actions being taken at all levels and their willingness to take action to prevent or lessen the impact of climate change. The survey also attempted to identify actions being taken by the community to prevent or lessen the impact of climate change as well as barriers to action. Finally, the KAP survey measured media use, prominence of climate change stories in the media and most effective ways to reach communities with messages.

A mix of quantitative and qualitative methods were utilized. A household survey was conducted among selected households from identified urban and rural communities based on the stratification detailed below. Additionally 9 focus group interviews were conducted in selected communities and 7 in-depth interviews with stakeholders.

According to the Statistical Institute of Belize, the total population of Belize is 340,844.

Total	340,844	Male	Female
0-14 (35.3%)	120,480	61,480	59,000
15-24 (21%)	71,525	36,432	35,093
25-54 (35.5%)	120,921	61,112	59,809
55-64 (4.6%)	15,526	7,719	7807
65 years + (3.6%)	12,392	5,848	6544

Table 1: Total Population, Statistical Institute of Belize

The study focused on persons 18-64 years which means that the number from which a sample could be selected is 179,359. Please note that the age bracket 15-24 comprises a total population of 71,525. Since this is not further disaggregated in national population statistics, it is assumed that the population 15-17 represents approximately 40% of the total population 15-25 while the next 60% is represented in the age bracket 18-24.

The study was conducted in both urban and rural communities. Stratified random sampling using a quota sampling scheme was utilized to select the sample for this study. First, the total population 18-64 was calculated based on 2010 census (179,359). A sample calculator was then used to calculate the population to be surveyed based on a 4% margin of error and a confidence level of 95% as per table 1 below. Once the total number of persons to be sampled were identified, the population was further broken down by gender, age, and area of residence (urban/rural) (see table 2.0).

Total target population	Margin of Error	Confidence level	Total persons to be sampled	Sample by district
179,359	4%	95%	599	Belize (20%) 120
				Cayo (20%)120
				Toledo (15%) 90
				Stann Creek (15%) 90
				Orange Walk (15%)90
				Corozal (15%) 90

Table 2.0 : sample distribution by district

Area	**Total #**	**Adult female 25 years and older**	**Adult male 25 years and older**	**Youth 18-24**
Belize District				
Belize City	60	20	20	20
San Pedro Town	30	10	10	10
Crooked Tree Village	15	5	5	5
Gales Point Manatee	15	5	5	5
Total	**120**	**40**	**40**	**40**
Orange Walk District				
Orange Walk Town	40	15	15	10
Carmelita	25	10	10	5
Guinea Grass	25	10	10	5
Total	**90**	**35**	**35**	**20**
Cayo District				
San Ignacio	40	15	15	10
Belmopan	30	10	10	10
Camalote	25	10	10	5
Armenia	25	10	10	5

Total	**120**	**45**	**45**	**30**
Stann Creek District				
Dangriga	40	15	15	10
Hopkins	25	10	10	5
Pomona	25	10	10	5
Total	**90**	**35**	**35**	**20**
Toledo District				
Punta Gorda	40	15	15	10
Bella Vista	25	10	10	5
San Antonio	25	10	10	5
Total	**90**	**35**	**35**	**20**
Corozal District				
Corozal Town	40	15	15	10
Copper Bank	25	10	10	5
San Narcisio	25	10	10	5
Total	**90**	**35**	**35**	**20**
Total	600	225	225	150

Table 3.0 Sample distribution by community, age and gender

18 enumerators (3 per district) were trained to conduct the survey among households. One supervisor was assigned to each district team to ensure that enumerators are implementing survey based on the agreed protocols.

The study achieved a response rate of 94% with 564 of the targeted 600 surveyed being completed. 36 were incomplete.

Qualitative data gathering

9 focus groups were conducted in selected communities based on the following criteria;

- Coastal and low lying communities vulnerable to climate change
- Communities that depend on agriculture as their main source of income
- Communities that depend on fishing as their main source of income
- Communities that currently have climate change initiatives/projects undergoing
- Communities that depend on tourism as their main source of income

Focus group interviews were conducted in the following communities based on the advice of stakeholders:

- Farmers from Trio participating in Yaxche's agro forestry project
- Tour guides and tour operators from Placencia and surrounding communities identified by Southern Environmental Association (SEA)
- Fishers and cane farmers from Copper Bank
- Fishers from Chunox
- Community members from Hopkins
- Community members from Hope Creek
- Community members from Flowers Bank
- Community members from Burrel Boom
- Community Members from Monkey River Village

92 persons were interviewed during focus group discussions. Focus groups comprised of a mix groups (male/female) as well as homogenous groups.

7 in-depth interviews were also held with climate change experts and managers of climate change projects/programmes in Belize including the National and Caribbean Climate Change Offices.

A survey protocol was developed and submitted to the UNDP Office for Barbados and the Organization of Eastern Caribbean States (OECS) as the implementing agency, as well as the Public Education Sub-committee of the National Climate Change Center. The protocol was revised based on input and feedback from UNDP Barbados and the OECS as well as the Public Education sub-committee and pretested in one community. No changes were made after the pretest. The survey and focus group discussions were conducted during the month of August.

Data Analysis and Reporting

All surveys submitted by enumerators were reviewed for completeness and then submitted for data entry. 2 data entry personnel were recruited to create the data base and enter data into SPSS 22.0. Once data entry was completed the data base was reviewed for quality and completeness and tables were generated using univariate and bivariate analysis. Qualitative data gathered from focus groups and in-depth interviews were synthesized, coded and analyzed.

3.0 Presentation and Analysis of Findings

Key findings on respondents' knowledge on climate change, attitudes towards climate change and practices to address climate change as well as media use are presented in this section. The findings from the quantitative survey are presented and analysed first, followed by a presentation of the findings from the qualitative component of the study.

3.1 Presentation of Findings from quantitative study

3.1.1 Demographic Variables

A total of 564 respondents from 6 districts completed the survey. Of the total number of respondents, 22% are from the Cayo District, 20% from the Belize District, 16.3% from the Stann Creek District, 16% from Toledo and 12% from Corozal and Orange Walk respectively.

The majority of respondents, 67% are between the ages of 25 and 54 years while the male/female ratio is almost 1:1. It should be noted that both age and gender were two of the sampling criteria to ensure a representative sample.

Occupation of respondents include domestic workers, service and sale workers, professionals, students, workers in the forestry/agriculture/fisheries industry, managers/supervisors and businesspersons and members of the armed forces. 16% of respondent are domestic workers, 18.7% of respondents are students and 14.7% of respondents are unemployed.

The highest percentage of respondents ,51.2% , have been living in the community all their lives while 17.9% have been residing in the community between 10 and 12 years. This is very important as they are likely to note impact of climate change over time in their communities as well as are more likely to be motivated to take action.

36.5% of respondents possess a secondary education while 25.2% have completed primary education and 21.8% have an associate's degree.

A little under 45% of homes are situated near rivers, coastline, low-lying areas or on steep incline. These homes are deemed more vulnerable to climate related hazards than the 55% that have indicated that their homes are situated on flat inland areas. The majority of homes, 59%, are owned by respondents and the majority (77%) are constructed with zinc roofing while 35% have outer walls of wood, 36.3% have outer walls of wood and concrete and 24.3% have outer walls of concrete.

An interesting finding is that the majority of households, 76.6%, either do not have or are not sure they have insurance. Similarly, 77% either do not have insurance against climate related hazards or are not sure if their insurance covers climate related hazards. This is significant considering the fact that 45% of homes are situated in vulnerable areas prone to climate related hazards.

Demographic Variable	Response Option	Total N= 564
Location	Cayo District	124 (22%)
	Belize District	111 (20%)

Demographic Variable	Response Option	Total N= 564
	Stann Creek District	92 (16.3%)
	Toledo District	104 (16%)
	Corozal District	66 (12%)
	Orange Walk District	67 (12%)
Age	18 to 24 years	164 (29.1%)
	25-40 years	194 (34.4%)
	41-54 years	185 (32.8%)
	55 to 70 years	15 (2.7%)
	Older than 70 years	6 (1.1%)
Gender	Female	288 (51.1%)
	Male	276 (48.9 %)
Occupation	Domestic Worker	89 (16%)
	agriculture, forestry, fisheries worker	47 (8.3%)
	Manager/Supervisor/Business man/woman	60 (10.6%)
	Professional	45 (8%)
	Student	105 (18.6%)
	Technician	18 (3.2%)
	Service/Sales worker	46 (8.2%)
	Armed forces	19 (3.2%)
	Craft and related trade worker	22 (3.9%)
	Unemployed	83 (14.7%)
	Clerical Support worker	20 (3.5%)
	Other	10 (1.8%)
Years living in community	Less than a year	6 (1.1%)
	1-5 years	90 (16.0%)
	6-10 years	78 (13.8%)

Demographic Variable	Response Option	Total N= 564
	10-20 years	101 (17.9%)
	All my life	289 (51.2%)
Level of Education	Primary Education	142 (25.2%)
	Secondary Education	206 (36.5%)
	Associates Degree	123 (21.8%)
	Masters or Higher	17 (3.0%)
	Other	76 (13.5%)
Household size	Live alone	61 (11%)
	Less than 5 persons	361 (64.0%)
	5 to 10 persons	133 (23.6%)
	More than 10 persons	9 (1.6%)
Location of home	Not situated near to a river-side, coastline, and low lying area or on steep incline	319 (56.6%)
	Situated near river	88 (15.6%)
	Situated near coastline	69 (12.2%)
	Situated near low-lying areas	73 (12.9%)
	Situated near steep incline	15 (2.7%
Roofing Materials	Zinc/metal	434 (77%)
	Concrete roofing	92 (16.3%)
	Clay/concrete tiles	14 (2.5%)
	Thatch roofing	18 (3.2%)
	Make Shift	1 (.2%)
	Other	5 (.9%)
Outer Walls	Wood	198 (35%)
	Wood and concrete	205 (36.3%)
	Concrete	137 (24.3%)

Demographic Variable	Response Option	Total N= 564
	Thatch	4 (.7%)
	Plywood	9 (1.6%)
	Plycem	8 (1.4%)
	Other	3 (.5%)
Home ownership	Own	332 (59%)
	Rent	121 (21.5%)
	Lease	50 (8.9%)
	Other	61 (10.8%)
Home insurance	Yes	132 (23.4%)
	No	312 (55.3%)
	Don't know/Not sure	120 (21.3%)
Home insured against climate related hazards	Yes	127 (22.6%)
	No	291 (51.6%)
	Don't Know/Not Sure	146 (25.9%)

Table 4.0 Demographics of respondents

3.1.2 Knowledge on Climate Change

This section presents findings on respondents' knowledge on climate change. It includes responses on general knowledge as well as specific factors contributing to or associated with climate change.

The majority of respondents, 89.1% have heard the term climate change. Only 10.9% of respondents have never heard the term climate change before.

Have You heard the term climate change?	Response Options	Frequency	Percent
	Yes	503	89.1
	No	61	10.9
	Total	564	100.0

Table 5.0 Respondent who have heard the term climate change

The most common responses as it relates to respondents understanding of what is climate change are changes in weather patterns and weather conditions (22.1% of respondents), changes in temperature (19.8% of respondents) and extreme heat (17.9% of respondents). Other popular responses include; changes in sea level (14%), changes in the environment (11.3%) and global warming (6.3%). However, although respondents were able to describe changes associated with climate change they were unable to properly define climate change. They understand that it brings about specific changes but the specific definition of what brings about these changes was not provided by respondents. Greenhouse effect caused by the increasing concentration of carbon dioxide, and other greenhouse gases in the atmosphere was not a response provided by any respondent in the survey.

What do you understand by the term climate change?	Responses	Frequency	Percent
	Changes in weather patterns/conditions	125	22.1
	Changes in sea level	79	14.0
	Changes in temperature	112	19.8
	Changes in the environment	64	11.3
	Extreme Heat	101	17.9
	Global Warming	36	6.3

Table 6.0 Respondents understanding of the concept of climate change

Based on respondents understanding of climate change in Table 5.0 above, the majority of respondents believe that their community is being affected by climate change. 83.4% of respondents indicate that their community is being affected by climate change. Only 7.6% of respondents do not feel that their community is being affected and 9.0% are not sure.

Is Climate change affecting your community?	Response Options	Frequency	Percent
	Yes	470	83.4
	No	43	7.6
	Don't Know/Not Sure	51	9.0
	Total	564	100.0

Table 7.0 Climate change affecting community

Respondents are experiencing the impact of climate change on their communities and are able to identify the most common impacts. The most common impacts of climate change on their communities, noted by respondents, include; changing weather patterns (91.9%), stronger and more frequent storms (73.1%), Increase in air temperature (73.6%) and flooding (71.7%). They may not grasp comprehensively the concept of and impacts of climate change but based on daily experiences are able to identify the major changes they feel are resulting from climate change.

These are followed by increase in insect pest (67.6%) and differences in seasonality of crops (66.2%), decrease in fish stock (58.2%) and increase in vector borne illnesses (51.6%). Other impacts of climate change such as increase in sea surface temperature, sea level rise, erosion along the coast and landslides appear to be less visible in communities sampled. Only 35% of respondents indicated that landslide were affecting their communities, 38.3% indicated erosions along the coast, 44% indicated sea level rise and 39% indicated increase in sea surface temperature.

Knowledge Variable	Response Options	N=564
Changing weather patterns	Yes	518 (91.9%)
	No	24 (4.3%)
	Don't Know/Not Sure	22 (3.9%)
Increase in sea surface temperature	Yes	220 (39%)
	No	210 (37.2%)
	Don't Know/Not Sure	134 (23.8%)
Stronger and more frequent storms	Yes	412 (73.1%)
	No	112 (19.7%)
	Don't Know/Not Sure	40 (7.1%)
Sea Level Rise	Yes	248 (44%)
	No	211 (37.4%)
	Don't Know/Not Sure	105 (18.6%)
Erosion along the coast	Yes	216 (38.3%)

Knowledge Variable	Response Options	N=564
	No	229 (40.6%)
	Don't Know/Not Sure	119 (21.1%)
Increase in air temperatures	Yes	415 (73.6%)
	No	87 (15.4%)
	Don't Know/Not Sure	62 (11.0%)
Landslides	Yes	198 (35.1%)
	No	237 (42.0%)
	Don't Know/Not Sure	129 (22.9%)
Flooding	Yes	404 (71.7%)
	No	116 (20.6%)
	Don't Know/Not Sure	44 (7.8%)
Differences in seasonality of crops	Yes	373 (66.2%)
	No	106 (18.8%)
	Don't Know/Not Sure	85 (15.1%)
Increase in insect pests	Yes	381 (67.6%)
	No	85 (15.1%)
	Don't Know/Not Sure	98 (17.4%)
Decrease in fish stock	Yes	328 (58.2%)
	No	130 (23.0%)
	Don't Know/Not Sure	106 (18.8%)
Increase in vector borne diseases	Yes	291 (51.6%)
	No	180 (31.9%)
	Don't Know/Not Sure	93 (16.5%)

Table 8.0 Impact of climate change on communities

In most cases the majority of respondents are able to associate the more prominent changes they are seeing in their communities to climate change. 94.7 % of respondents associate changing weather patterns with climate change. 89% of respondents associate stronger and more frequent hurricanes with climate change, 87.4% associate increase in air temperatures with climate change and 85.5% associate flooding with climate change. These are also the top 4 issues that have been impacting their communities over the past ten years as noted in table 7.0.

There are six other changes that a significant number of respondents either do not associate with climate change or do not know are associated with climate change. 27.3% of respondents do not associate increase

in sea surface temperature and coral bleaching with climate change. 21.8% do not associate sea level rise with climate change. 36% do not associate erosion along the coast with climate change while 36.5% do not associate landslides with climate change, 34.5% do not associate decrease in fish stock with climate change and 38.3% do not associate melting of the ice caps at the poles with climate change. This indicates that respondents understand some of the impacts of climate change but do not have a comprehensive understanding of all the major changes associated with climate change that are affecting or can affect their communities.

Knowledge Variable	Response Options	N=564
Changing weather patterns	Yes	534 (94.7%)
	No	15 (2.7%)
	Don't Know/Not Sure	15 (2.7%)
Increase in sea surface temperature	Yes	410 (72.7%)
	No	80 (14.2%)
	Don't Know/Not Sure	74 (13.1%)
Stronger More frequent storms	Yes	502 (89%)
	No	33 (5.9%)
	Don't Know/Not Sure	29 (5.1%)
Sea Level Rise	Yes	441 (78.2%)
	No	75 (13.3%)
	Don't Know/Not Sure	48 (8.5%)
Erosion along the coast	Yes	361 (64%)
	No	131 (23.2%)
	Don't Know/Not Sure	72 (12.8%)
Increase in air temperatures	Yes	493 (87.4%)
	No	43 (7.6%)
	Don't Know/Not Sure	28 (5.0%)
Landslides	Yes	358 (63.4%)
	No	113 (20.0%)
	Don't Know/Not Sure	93 (16.5%)
Flooding	Yes	482 (85.5%)

Knowledge Variable	Response Options	N=564
	No	39 (6.9%)
	Don't Know/Not Sure	43 (7.6%)
Differences in seasonality of crops	Yes	436 (77.3%)
	No	56 (9.9%)
	Don't Know/Not Sure	72 (12.8%)
Increase in insect pests	Yes	411 (72.9%)
	No	51 (9.0%)
	Don't Know/Not Sure	102 (18.1%)
Decrease in fish stock	Yes	364 (64.6%)
	No	81 (14.4%)
	Don't Know/Not Sure	119 (21.1%)
Melting of the icecaps at the poles	Yes	348 (61.7%)
	No	123 (21.8%)
	Don't Know/Not Sure	93 (16.5%)

Table 9.0 Conditions associated with climate change

Although a significant percentage of respondents are aware of some of the impacts associated with climate change and are able to identify some of these impacts within their communities, another major gap in knowledge appears to be a comprehensive understanding of what causes climate change. From the variables presented, poor industrial practices was the most commonly identified cause of climate change. However, only 54.8% identified poor industrial practices as a cause of climate change. Deforestation was identified by 48.7% of respondents followed by burning of fossil fuels (48%), improper waste disposal (47.4%), transportation (46%) and natural occurrence (41.7%). Only 32.2% of respondents identified electricity generation as a cause of climate change while 26.3% feel that it is an act of the creator. This is an important knowledge gap to address as communities may not feel that they are engaged in any actions to contribute towards climate change and may not be motivated to take action if they are not able to see themselves as part of the problem or solutions to the issue.

Knowledge Variables	N=564
Burning fossil fuels such as coals, oils and natural gases	271 (48%)
Transportation such as driving a car, bus or boat (vehicle emission)	259 (46%)
Deforestation (Cutting down trees and mangroves)	275 (48.7%)
Poor Industrial Practices	309 (54.8%)
Electricity Generation	182 (32.3%)

Improper Waste disposal	267 (47.4%)
Natural Occurrence	235 (41.7%)
Acts of the creator	148 (26.3%)
Don't Know/Not Sure	40 (7%)

Table 10.0 Causes of climate change

3.1.3 Attitude to Climate change

This sub-section presents findings on respondents' attitudes towards climate change. It includes findings related to respondents' level of concern, their perception on actions that communities can take to prevent or lessen the impact of climate change, their perception on actions being taken by national and community leaders and their willingness to take action to prevent or lessen the impact of climate change.

Table 11.0 indicates that the majority of respondents (90.3%) are somewhat concerned or very concerned about climate change. Only 9.7% of respondents indicated that they are not concerned or are not sure how they feel about the issue.

Attitude Variable	Frequency	Percent
very concerned	271	48.1
somewhat concerned	238	42.2
not concerned	35	6.2
don't know/not sure	20	3.5
Total	564	100.0

Table 11.0 Level of concern

A consistent theme throughout the study is the lack of comprehensive knowledge and awareness on climate change. It is not surprising that respondents identify increase in public awareness as the most important actions in helping communities to prevent the impact of climate change. With increase public awareness, comprehensive knowledge can increase thus increasing the general public's awareness of actions they can take to prevent or lessen the impact of climate change.

Respondents feel that the four (4) most important actions in helping communities to prevent the impact of climate change are; increase in public awareness (77.8%), conserving energy and natural resources (71.8%), increase in reforestation (71.6%) and encourage and promote community participation (71.6%).

Only 36.9% of respondents feel that it is very important to discourage construction of new settlements in coastal areas or relocate vulnerable communities. Only 43.3% of respondents feel that it is important to build structures to protect the coast.

Do you think the following are important in helping the community to prevent the impact of climate change ?				
	Not important	Somewhat important	Very important	Don't know/Not sure
Comply with environmental laws	8.7	24.5	61.2	5.7
Build structures to protect the coast	14.2	23.9	43.3	18.6
Conserve energy and natural resources	6.4	14.4	71.8	7.4
Encourage water conservation and reuse	8.7	19.9	62.1	9.4
Discourage construction of new settlements in coastal areas/relocation of vulnerable coastal communities	13.0	22.5	36.9	27.7
Decrease deforestation	4.3	12.1	69.0	14.7
Increase reforestation	4.5	9.9	71.6	14.0
Increase public awareness on climate change issues	3.8	12.4	77.8	6.0
Encourage and promote community participation	7.3	17.9	70.9	3.9
Disaster Management plans	5.2	26.8	62.6	5.5

Table 12.0 respondents rating of importance of actions to prevent impact of climate change

A significant percentage of respondents do not feel that action is being taken at any level to address the impact of climate change. 49% of respondents strongly disagree or disagree that community leaders are taking action, 44.7% strongly disagree or disagree that central government is taking action and 46.6% strongly disagree or agree that community members are taking action. Only 29.4% agree or strongly agree that community leaders are taking action while 33.1% strongly agree or agree that central government is taking action and 32.3% agree that community members are taking action.

An encouraging finding is that just under 60% of respondents indicate that they are prepared to do whatever it takes to help preserve the environment. Equally encouraging is that respondents do not agree that there is nothing a small country like Belize can do about climate change. The majority of respondents (66.7%) either disagree or strongly disagree with this statement.

State your level of agreement with the following statements						
	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know/Not Sure
Community Leaders are taking action to address the impact of climate change on communities	10.1	38.9	13.4	27.3	2.1	8.2
Central Government is taking action to address the impacts of climate change on communities	10.4	34.3	15.5	29.6	3.5	8.2
Community members are taking action to address the impacts of climate change on the community	10.0	36.6	14.5	26.8	5.5	6.7

I am prepared to do whatever I can to help preserve the environment	8.9	3.0	23.4	44.1	15.1	5.5
There is nothing a small country like Belize can do about climate change	43.7	23.0	9.8	11.3	5.7	6.6

Table 13.0 Respondents perception of actions taken by various actors

Most respondents (51.1%) feel that the government is responsible for addressing climate change. 31.0% also feel that everyone is responsible for addressing climate change. Interestingly, only a small percentage of respondents (3.4%) feel that businesses/industries should be responsible for taking action although poor industrial practices was cited as the main cause of climate change in Belize. Similarly, only a very small percentage of respondents indicated that community organizations (6.6%) and private citizens (2.2%) should be responsible although just under 60% previously indicated that they are prepared to do whatever it takes to protect the environment. Similarly, in Table 11.0, a significant percentage of respondents (70.9%) indicated that it is very important to encourage and promote community participation to prevent or lessen the impact of climate change.

Attitude Variable	Response Options	Frequency	Percent
Who do you think is mainly responsible for addressing climate change in Belize (Circle all that apply)	government	305	51.1
	business/industry	19	3.4
	community organizations	37	6.6
	private citizens	11	2.0
	everyone	175	31.0
	Don't know/not sure	17	3.0
	Total	564	100.0

Table 14.0 Respondents perception of who should be responsible for addressing climate change

Most respondents (59.8%) are very interested in finding out more about climate change. 32.1% are somewhat interested while 5% are not interested in finding out more about climate change.

Attitude Variable	Response Options	Frequency	Percent
Are you interested in finding out more about climate change and its impact on Belize?	very interested	337	59.8
	somewhat interested	181	32.1
	not interested	28	5.0
	don't know/not sure	18	3.2
	Total	564	100.0

Table 15.0 Respondents level of interest in finding out more about climate change

3.1.4 Practices related to climate change

This sub-section present findings related to community practices to prevent or lessen the impact of climate change. It presents finding on actions taken by communities, actions taken by government and barriers to action by the community.

Based on the findings, very little action is being taken in communities to prevent or lessen the impact of climate change. Over 60% of respondents indicated that they or their communities did not take any actions or were not sure if they or their communities had taken action. Only 39.5% of respondents indicated that they or their communities had taken any action.

Practice Variable	Response Options	Frequency	Percent
Have you or your community taken any actions to prevent or lessen the impact of climate change?	yes	223	39.5
	no	287	50.9
	don't know/not sure	54	9.6
	Total	564	100.0

Table 16.0 Community taking action to lessen impact of climate change

Question 29 asked what actions have been taken or can be taken by the community to prevent or lessen the impact of climate change. The action that has been least taken or which the community appears least favourable to take are observing building codes (1.4%), building sea walls (19.5%), and carpooling (22.9%). The actions that have been taken or are that communities are willing to take include raise awareness (58.9%), proper waste disposal/composting (51.2%), reforestation (44.9%), and not cutting down trees (44.2%).

Practice variable	Response Options	N=564
Water Harvesting	Yes	162 (28.8%)
	No	402 (71.2%)
Observe Building codes	Yes	98(1.4%)
	No	465 (82.6%)
Building sea walls	Yes	110 (19.5%)
	No	454 (80.5%)
Mangrove conservation	Yes	163 (28.9%)
	No	401 (71.1%)
Reforestation (planting trees)	Yes	253 (44.9%)
	No	311 (55.1%)
Proper waste disposal/composting	Yes	289 (51.2%)
	No	275 (48.8%)
Conserve energy	Yes	234(41.5%)
	No	330 (58.5%)
Carpooling/taking public transportation	Yes	129 (22.9%)
	No	435 (77.1%)
Reuse/recycle waste	Yes	238 (42.2%)
	No	326 (57.8%)

Raise awareness	Yes	332 (58.9%)
	No	232 (41.1%)
Not cutting down trees/forests	Yes	249 (44.2%)
	No	315 (55.8%)
Disaster management plans	Yes	193 (34.3%)
	No	371 (65.8%)

Table 17.0 Actions being taken by community

Respondents were able to identify some actions that government has taken on climate change. However, with the exception of increase public awareness (60.2%), all others actions received low positive responses by respondents. 42.9 % of respondents feel that government has implemented early warning systems for health related impacts and flood warning systems. Only 36.7% feel that government has taken action to reduce use of fossil fuel, 31.4% feel government has taken action to implement energy efficient measures, 31.6% feel that government has increased research and developed renewable technologies, and only 34.8% feel that government has provided support to the agriculture sector to improve crop performances.

Actions taken by government to lessen impact of climate change in the community	N=564
Reduce use of fossil fuel (coal, oil, natural gas)	207 (36.7%)
Implement energy efficient measures in the industrial and commercial sectors	177 (31.4%)
Increase research and development of renewable technologies	178 (31.6%)
Provide support to agriculture sector to improve crop performances	196 (34.8%)
Increase public awareness of climate change issues	340 (60.2%)
Early warning systems for health related impacts(such as dengue)	242 (42.9%)
Flood warning systems	248 (42.9%)
Enforce building codes	125 (22.2%)

Table 18.0 Action taken by government

The main reasons why communities have not taken action are that they do not have enough information and are not aware of what actions to take. 46.0% of respondents indicated that they do not have enough information while 40.4% indicated that they do not know what actions they should take to prevent or lessen the impact of climate change.

This is a significant finding as Table 16.0 demonstrates that communities were not taking a lot of the actions identified that could prevent or lessen the impact of climate change. Even if communities are aware of the actions it appears that they need more information and support to implement these actions.

Variable	Response Options	Frequency	Percent
If you or your community has not taken any action, what has prevented you from taking action to prevent or lessen the impact of climate change?	not enough information	259	46.0
	not aware of what actions can/should be taken	228	40.4
	climate change is not a concern of the community	34	6.0
	it is not our responsibility to take action	12	2.1
	Other	31	5.5
	Total	564	100.0

Table 19.0 Reasons community has not taken action

3.1.5 Media Use

This sub-section presents findings on media use among respondents. It includes findings on exposure to information on climate change, preferred media of respondents, and effective channels for reaching communities.

Just over 60% of respondents are exposed to information on climate change. However, only 39.2% watch, listen to or read stories on climate change often. 26.8% do so occasionally while 31.5% rarely or never listen to, watch or read stories on climate change.

How often do you listen/read/watch stories on climate change		
Response Options	Frequency	Percent
Very Often	221	39.2
Occasionally	151	26.8
Rarely	149	26.4
Never	29	5.1
Don't Know/Not Sure	14	2.5
Total	564	100

Table 20.0 How often respondents view stories on climate change

Respondents are interested in stories on climate change. 85.2% indicated that they are interested in reading, watching, listening to stories on climate change. Only 6.4% indicated that they are not interested while 8.3% did not know or were not sure.

Would you like to read/watch/listen to stories on climate change		
Response Options	Frequency	Percent
Yes	481	85.2
No	36	6.4
Don't know/Not Sure	47	8.3
Total	564	100

Table 21.0 Respondents interest in receiving information on climate change

Television and radio are the two main sources of information on climate change for respondents. The majority of respondents (66.5%) indicated that they receive information on climate change through the television while 16.1% receive information via radio. Schools, government organizations, newspaper, pamphlets/brochures were the channels least identified by respondents

Where do you get your information on climate change?		
Response options	Frequency	Percent
Television	375	66.5
School	4	.7
Friends/Family	23	4.1
Government organizations	2	.4
I get no information on climate change	8	1.4
Others	1	.2
Radio	91	16.1
Newspaper	7	1.2
Website/internet	30	5.3
Community groups	10	1.8
Pamphlets/brochures	5	.9
Lectures/workshops	8	1.4

Table 22.0 Source of information on climate change

Similarly respondents indicated that the most effective ways to reach them with information on climate change was through the television and radio. 71.7% indicated that television was the most effective channel while 13.7% indicated that radio was the most effective channel.

71.3% of respondents indicated that Love FM was the most listened to radio station.

Which radio stations do you listen to most?		
Response Options	Frequency	Percent
Love FM	402	71.3
Estereo Amor	17	3.0
Krem FM	23	4.1
More FM	19	3.4
Wamalali	9	1.6
Fiesta FM	50	8.9
Radio Bahai	3	.5
None	31	5.5
Other	10	1.8
Total	564	100.0

Table 23.0 Most popular radio station

Almost all respondents have access to television. 97.8% of respondents indicated that they have access to a television while 60.6% have access to internet.

3.2 Comparison of indicators to 2005 Climate Change study where applicable

Although it was impossible to survey the same sample from the 2005 KAP survey, it is possible to draw from some of the indicators in the 2005 and 2016 survey to capture a general picture of changes in the public's knowledge, attitudes and practices for some indicators. The 2005 and 2016 survey presented a few similar questions to respondents. The indicators were selected for those questions and a quick summary of the results are presented below.

Location of respondents home

Response Options	2005	2016
Flood Plain	4%	15.6%
Coastal/Low Lying area	32%	12.9%
Beach	9%	12.2%
Hilly Inland	19%	2.7%
Flat Inland	35%	56.6%

Table 24.0 location of respondents home 2005 and 2016

In 2005 more respondents resided in vulnerable areas than those who formed the 2016 sample.

Insurance against climate related hazard

Response option	2005	2016
Yes	40%	22.6%
No	60%	51.6%
Don't know/Not Sure	N/A	

Table 25.0 Insurance against climate hazard 2005 and 2016

A significant decrease is noted in persons having insurance from 2005 to 2016. In 2005, 40% of respondents had climate related hazard insurance while in 2016 only 22.6% of respondents have insurance. 51.6% indicated that they do not have insurance while 25.9% did not know or were not sure.

Heard the term climate change

Response option	2005	2016
Yes	84%	89.1%
No	16%	10.9%

Table 26.0 Heard the term climate change 2005 and 2016

Just over 5% increase was noted in the percentage of respondents who have heard the term climate change before.

Popular understanding of meaning of climate change

Responses	2005	2016
Changes in weather	52%	22.1%
Changes in climate	12%	17.9%
Changes in temperature	12%	19.8%
Global warming	4%	6.3%

Table 27.0 Popular understanding of meaning of climate change 2005 and 2016

Although the percentage distribution changes, the top 3 meanings associated with climate change remain changes in weather, changes in climate, and changes in temperature. The term global warming is still only utilized by a small percentage of respondents.

Levels of concern about climate change

Response Options	2005	2016
Not concerned at all	4%	6.2%
Very concerned	51%	48.1%
Moderately concerned	45%	42.2%

Table 28.0 Levels of concern 2005 and 2016

The level of concern of respondents remain almost the same with a 2.2% increase in respondents who indicated that they are not concerned at all and a 3% decrease in the number of respondents who are very concerned or moderately concerned.

Perception of level of importance of some measures to be taken to prevent or lessen impact of climate change

Action to be taken	Not important		Moderately important		Very important		Don't know/Not Sure	
	2005	2016	2005	2016	2005	2016	2005	2016
Water system management plan	5%	8.7%	24%	19.9%	70%	62.1%	1%	9.4%
Discourage construction of settlements in coastal areas/relocation of vulnerable coastal communities	12%	13%	35%	22.5%	51%	36.9%	2%	27.7%

Encourage and promote community participation	2%	7.3%	15%	17.9%	81%	70.9%	2%	3.9%
Increase public awareness	2%	3.8%	15%	12.4%	82%	77.8%	1%	6.0%

Table 29.0 Perception of level of importance of actions 2005 and 2016

In 2005, 70% of respondents indicated that developing and implementing a water system management plan was very important. However in 2016 this figure decreased in almost 8%. In 2016, almost 11% less persons felt it was very important to discourage construction of settlements in coastal areas or relocate vulnerable communities and 13% less respondents felt this was moderately important than in 2005.

In 2016, although about 4% less respondents felt that increasing public awareness was an important action, this remains the number one response, with the highest percentage of respondents indicating very important (82% and 77.8%) in 2005 and 2016 respectively. Similarly, encourage and promote community participation was the second most important action identified in both surveys.

Additionally in 2005, only 23% of respondents felt that it was government's responsibility to take action on climate change. In 2016, 51.1% feel that it is government's responsibility to take action on climate change. This is very important to address in communicating with communities. It is necessary to provide information to communities on actions that government is taking to address climate change and how the community can participate in local actions.

3.3 Presentation and Analysis of Findings from Qualitative Study

A total of 9 focus groups comprising 94 persons were conducted in the following communities; Trio and Monkey River in the Toledo Districts, Chunox and Copper Bank in the Corozal District, Placencia, Hopkins and Hope Creek in the Stann Creek District, Flowers Bank and Burrell Boom in the Belize District . Communities were selected based on recommendation of stakeholders working on various projects associated with climate change.

Below is a summary of the main findings from the focus group and in-depth discussions.

3.3.1 Knowledge of Climate Change

The majority of participants in the focus group have heard the term climate change before. Similar to the findings from the survey, the most common terms associated with climate change include; changes in temperature, weather pattern change, changes in the climate and global warming. In some communities persons indicated that climate change is not a term that is commonly utilized. The term climate change would be more commonly used among organizations or persons from various sectors that have received training or education on this issue such as tour guides, some fishers, students etc.

Most community members express awareness of the concept of climate change and can observe and understand that there are many changes occurring in the community but would refer to the specific changes that they are observing. This is because they see the changes and can make the association with climate change based on the information they are receiving about climate change. However, they do not know enough about climate change to be able to explain the details.

In every community, changes associated with climate change have been observed. Coastal communities, low lying communities, and communities that depend on fishing, farming and the natural resources for

their livelihood are being affected the most. In those communities, focus group participants were able to describe vividly some of the changes that have been occurring over the past ten to fifteen years.

The changes described include:

a. Sea level rise: In some communities sea level rise has resulted in erosion as well as extinction of some fish species.

"In 2015, we experienced the highest tide. Water was on the land for a couple days. The beach was eroded and grass killed" Male, 51 years

"The entire community has been affected. 15 years ago high tide was only in October, now throughout the year there is a tide." Male, 60 years

"People along the coast have moved from the community because of the erosion. If it continues we will all need to move." Female, 41 years

Tour guides in one community expressed concern over the rapid erosion of several small cayes that are popular tourist sites.

"Many tourist return after years and are shocked to see the erosion taking place in some of their favourite spots." Male, 32 years

In one community participants have observed the extinction of some species of fish as water from the sea has flowed into the wetlands resulting in the salination of wetlands consequently killing some fish species that can only survive in fresh water. It is important to note that some of these impacts are as a result of human activity that may exacerbate the situation. However, communities largely attribute the impacts to climate change.

b. Changing weather patterns (more rainfall, hotter periods etc.): Changing weather patterns was a major concern expressed by all focus group participants.

Another major issue of concern to the majority of focus group participants is changing weather patterns. Some changes in the weather pattern described by participants include more rainfall, unpredictable rainfall, less rainfall/drought during periods when rainfall is expected, and overall increase in air temperature.

While these changes have been affecting all communities, communities that depend on agriculture expressed the most concern. According to focus group participants, livelihoods and food security is being significantly impacted as farmers are no longer able to get the desired yield from their crops. In some communities farmers are no longer able to plant certain crops.

" Being a resident of this community all my life and most people depend on agriculture for survival. In the past we cut milpa in February/March and burn with intention to plant in May/June when the rains come. A little rain may come which allows us to plant but then there is an extended dry and the rain does not come until August/September. By this time it is too late as crops have suffered during the long dry." Male, 61 years

"Farmers get frustrated and try to change planting patterns, waiting until August/September, but by this time there is too much rain." Male, 53 years

In one community, participants expressed that they were a strong rice producer in the past, supplying the country with thousands of pounds of rice. However, this is no longer the case as farmers are affected by

the changing weather patterns and are not aware of new methods or new technology that they can use to adapt to the changes that are obviously here to stay.

For community members that do not depend on agriculture, the main concern is the drastic increase in temperature and the unpredictability of the weather. Some participants observed that it is " hot day and night" and that " cold fronts are far less frequent than before". One participant expressed that they are aware that Belize reported the highest air temperature in history in July of this year.

c. increase in sea surface temperature and coral bleaching: Another change observed by focus group participants is the increase in sea surface temperature and coral bleaching. Tour guides, fishers and those working in the tourism sector as well as residents of coastal communities have observed this change.

" Right now the water in the sea is hot. When we are diving we notice that the water is much warmer than it should be at this time of the year." Male, 41 years

" The temperature should be much lower this time of the year. It is too hot for fishes, some species cannot live in warm water and so they will travel to cooler waters and we have to go further to catch fishes." Male, 35 years

"It is already affecting us. If the temperature of the se continues to rise even the barrier reef will be affected." Male, 43 years

"We are already seeing coral bleaching in some areas which means that the water is getting warmer." Male 40 years

d. Differences in seasonality of crops: Differences in seasonality of crops was a common change mentioned in several focus groups. Participants express that crops or fruits "come out of season" which means that they are yielding crops outside of the season that is normally expected. Some examples cited include:

" The Mayflower is flowering from March"

" *Cashew season is usually in March/April but this year cashew was late. We are now having cashews even in December"*

" Mangoes are plentiful one year and then scarce the next. This year mangoes were a bit late."

Participants indicated that most people living in their communities notice these changes and comment on them but do not necessarily associate these changes with climate change.

e. Other concerns: Other changes observed include; stronger storms and flooding. These were mentioned by a few participants. However, the major changes observed fall within the four categories previously discussed.

3.3.2 Attitude towards Climate Change

The majority of focus group participants expressed a high level of concern about climate change and the impacts they are seeing in the community. However, it is clear that the level of concern was greatest among those whose livelihoods are being impacted by the changes associated with climate change and those who are experiencing erosion of their property. Participants that expressed strongest concerns were those from communities that were already experiencing the impact of coastal erosion, farmers whose livelihoods were already being impacted by changes in weather patterns, fishers whose livelihoods were already being

impacted by increasing sea temperature and stronger storms that affect their ability to engage in fishing and those in the tourism sector that depend on the ecosystem to earn an income.

Respondents feel that there are many actions that can be taken by the community, organizations and government to prevent or lessen the impacts of climate change. Education about climate change was identified as a priority. Even though many persons are being affected and are seeing changes associated with climate change they do not have enough knowledge about the issue to understand comprehensively the changes that are occurring. Similarly, many are not aware of what actions they can take to prevent or lessen the impact of climate change. Education and awareness on climate change will help individuals and communities to be more conscious of their daily activities. Additionally, communities will be empowered to advocate against large scale actions that are impacting them.

Empowering communities to advocate is critical as some respondents have expressed that they are willing to play an active role. However, many do not believe that their actions or the actions of their communities are the main concerns. For example, participants from Monkey River indicated that they are of the view that the problems they are experiencing with erosion is directly associated with industrial activities from the banana farms in the area. The river in the area is damned and utilized to irrigate banana farms and environmental laws are not being complied with. Community members understand the importance of protecting the water shed and have expressed concerns that 60% of the Banana farms in the area are on the Monkey River Water Shed.

Community members are willing to take local actions such as educating the community about climate change, building sea walls to prevent further erosion. However they feel that central government needs to take action to address the factors contributing to the problem and also provide more support to the community.

Similar concerns were expressed by tour guides and tour operators from Placencia and surrounding communities. The majority of participants feel that they understand the need to take care of the ecosystem. However, they are observing large developments that are contributing to the destruction of the ecosystem. Participants feel that investors and real estate developers should be a primary target and that there should be stronger enforcement of environmental laws.

Respondents whose livelihoods are not directly affected by the changes occurring expressed less concern about climate change. While they expressed interest in learning more about climate change, the changes that they are seeing in their communities are not currently impacting them significantly for them to be motivated to address the situation with any level of urgency. One respondent, for example, commented

"Not *many people in our community are farmers so we are not affected." Female, 39 years*

"Most people comment and move along" Female, 55 years

It is important that the public understands the fragility and interconnectedness of the ecosystem in order for them to understand why they should be concerned about the changes occurring. This comprehensive understanding was manifested in a few groups and is an encouraging finding as it is clear that sound understanding of climate change can result in a change in attitude.

In Trio, for example, one farmer stated *"We have learnt that we are protecting the river and the mountains."* Another farmer expressed *"the communities most affected are those downstream. The work we are doing is protecting up stream so that communities downstream can benefit."*

In one fishing community, fishers expressed "we *understand that climate change is a global thing and we are part of the world so whatever is affecting the world will affect us*."

"Stronger storms are affecting the reef. Even if our community is not affected by the storm if the reef is affected then we are affected because we are fishers and we depend on the reef for a living"

3.3.3 Practices Related to Climate Change

Although actions are not large scale, focus group participants shared many promising practices that they are engaged in to prevent or lessen the impact of climate change. As previously mentioned there are some communities where no action is being taken as the level of concern is not very high. Education and awareness is key in these communities especially since focus group participants were able to identify several impacts of climate change in the community.

The communities where actions are being taken have already began to experience the impact of climate change on their livelihoods and their way of life and therefore the level of concern is very high. Programmes that appear to be successful in garnering community support are those that are able to demonstrate how actions will support, protect or sustain livelihoods while creating a balance with the environment.

Some of the main practices described by the participants include; Building sea walls, mangrove conservation, reforestation, not cutting down trees or forest, water harvesting, awareness raising . Most of the initiatives have been introduced by organizations working in or around the communities.

In Monkey River, the advanced stage of erosion has resulted in several families relocating to other parts of the community or leaving the community entirely. The community has advocated for government's support and attention to the issue and has mobilized public attention via the media. Community members are now embarking on a project to build a sea wall to prevent further erosion in the community.

In Dangriga and Hopkins, Pan American Development Foundation has been supporting communities to engage in mangrove reforestation in response to coastal erosion. Community volunteers, teachers, students and resort owners have partnered to replant mangroves in strategic areas in Hopkins and Dangriga.

In Copper Bank, where potable water is not present, the Belize Audubon Society has been supporting the community with education and awareness on water conservation. The community is currently embarking on a project to harvest water for use in the school and community during dry periods.

Below is one example of a promising practice being implemented by farmers to prevent or lessen the impact of climate change.

Agroforestry among Cocoa Growers in Trio

In 2014, the Government of Belize offered a concession to the Trio Cacao Growers Association to farm in the Maya Mountain North Reserve. Before the concession, most farmers engaged in banana farming and were allowed by the landowners to plant corn, beans and other products to sustain their families. Since 2014, however, farmers have been engaged in Cacao farming in the Maya Mountain Reserve. This project is a sound example of actions that communities can take to prevent or lessen the impact of climate change by securing livelihoods while protecting the environment.

Farmers expressed that at first it was very difficult to deviate from the old practice of slash and burn but as one farmer expressed "as we learn more we are leaving the old traditions and practices behind".

Farmers expressed that the most difficult thing is the current practice of having to clear the forest as they cannot use chemicals and must clear it in a way that the trees are not destroyed. However, the target for each farmer is to plant 10 acres of Cacao within the next five years. Although it takes 3 years for crops to mature, farmers are committed and motivated as they have already secured a market for their crops and are encouraged by the huge benefits that they and their families will enjoy while contributing to protecting the forest.

Farmers indicated that they are willing to share their experiences with other farmers who can benefit from this sustainable practice as well.

The majority of respondents indicated that they are willing to do their part but feel that government's action can be more visible in communities affected. In communities significantly impacted by erosion, participants feel that government should partner with community members to erect sea walls. Government can provide equipment and materials as well as technical experts and the community can provide labour. In communities that depend on subsistence farming who are directly affected by changing weather patterns, government can introduce new technologies or educate farmers on climate resilient crops that can be produced. Government should also be more stringent in enforcing environmental laws to ensure that large developments do not continue to impact communities. Fishers also feel that government can increase opportunities for alternative livelihoods especially during periods when it is impossible to go out to sea such as after a severe storm or long rainy periods.

3.3.4 Media

The majority of focus group participants indicated that mass media, primarily through television is an effective channel for reaching the community with information and messages on climate change. Additionally, direct engagement with communities was identified as even more effective than mass media. Participants recommend partnering with local organizations and local groups in the community as well as identifying influential persons in the community such as community leaders, local artists, popular opinion leaders etc.

Respondents recommend use of creative videos featuring persons in the communities to deliver messages or showcasing good practices to motivate others to action. Social media campaigns is also recommended as a very effective channel for reaching communities.

Several participants recommend organizing community activities such as sporting events or community theatre, drama presentations, music etc. to mobilize communities.

Many participants expressed that one campaign that they feel was effective was the off shore drilling campaign from Oceana. It was effective because the messages were on various media, the organization visited communities, schools, groups to make presentations and to engage the community, they developed colourful materials and paraphernalia, and they were constant with their messages.

4.0 Discussion and Recommendations

4.1 Knowledge on Climate change

Although respondents have heard about climate change, most only have a basic understanding of what it is. They understand that it is associated with changes in weather pattern, air temperatures, sea conditions, and other changes in the environment. However they are not able to express comprehensively that climate change is a change in climate resulting from greenhouse effect caused by the increasing concentration of carbon dioxide, and other greenhouse gases in the atmosphere.

Climate change is not a part of respondents' everyday language. Many have observed changes in their communities that are noticeable and are impacting livelihoods and their way of life in most instances. In most cases even though they do not possess comprehensive knowledge on climate change they are able to identify some of these changes as impacts of climate change. However, their focus is not on climate change or the causes of climate change but rather on the impacts that are being experienced in their communities.

Because they lack comprehensive knowledge and a global understanding of climate change most are unable to identify those impacts associated with climate change that are not directly affecting their communities. For example, 27.3% of respondents do not associate increase in sea surface temperature and coral bleaching with climate change. 21.8% do not associate sea level rise with climate change. 36% do not associate erosion along the coast with climate change while 36.5% do not associate landslides with climate change, 34.5% do not associate decrease in fish stock with climate change and 38.3% do not associate melting of the ice caps at the poles with climate change.

Knowledge gaps identified in the study must be addressed in order to ensure that individuals and communities have comprehensive knowledge of climate change. Given current experiences with the impacts of climate change, particularly for sectors of the communities such as farmer, fishers and for communities along the coast, these impacts can be a great starting or reference point for engaging individuals and communities in discussion to increase education and raise awareness.

Without adequate education and awareness among individuals there will continue to be a disconnect between what is occurring in their communities, what is occurring nationally and what is occurring globally and how individual actions, community actions, national actions and global actions are contributing to greenhouse gas emission and resulting in the changes being experienced. It is critically important for individuals to have more knowledge on climate change so that they can better understand the role they can play in preventing or lessening its impact. Some important areas to cover include; what is climate change, how it is caused, how it is affecting/can affect the globe, how it is affecting/can affect Belize, how communities are affected and actions communities can take.

4.2 Attitude to Climate Change

Although comprehensive knowledge is low, the level of concern is high among respondents. This is most likely due to the changes affecting most communities that are being observed by respondents. Concern is highest where livelihood and property is being affected. Those that depend on the ecosystem for livelihoods such as tour guides, tour operators, fishers and farmers demonstrate an appreciation for

protecting the ecosystem and are concerned about the developments that they see occurring which are contributing to climate change.

Similarly, because of the changes being observed, the demand for information on climate change is high. Almost 60% of respondents are very interested in learning more about climate change. The 32% that are somewhat interested are most likely from those areas where livelihood and properties are not yet being affected. This high demand for information on climate change is notable since respondents see public awareness and education as the number one action that can be taken to prevent the impact of climate change. The majority of respondents (71.6%) also feel that encouraging and promoting community participation is another important action that can be taken.

Respondents do not feel that enough action is been taken by community leaders, community member and government to address the impact of climate change. Respondents are, however, willing to take actions to prevent or lessen the impact of climate change. It is therefore important that government, community organizations and community leaders make more visible the current actions that are being implemented to prevent or lessen the impact of climate change. This will encourage individuals to do their part in responding to climate change especially since most of the respondents feel that government should take the lead in responding to climate change.

It is important for government to communicate clearly what actions it is taking at the policy, national, and community levels and also communicate to individuals and communities how they can support these efforts. It is clear that communities and individuals want to play and role. However, they want to see government taking the lead especially as it relates to those actions that are not within the purview of the community. These include enforcement of legislation, energy efficient measures and support to the agriculture sector.

4.3 Practices related to Climate Change

Although respondents express willingness to take action to prevent or lessen the impact of climate change, very little actions are being taken by individuals and communities. Individuals and communities do not have enough information or are not aware of what actions can be taken. This is linked to a lack of comprehensive knowledge on climate change. If respondents possess comprehensive knowledge they will be aware of the causes of the changes they are seeing and be able to identify actions that can be taken at various levels. If erosion is occurring as a result of industrial activities near communities then the action to be taken would include advocacy, awareness raising etc.

It is therefore important to communicate clearly to individuals and communities what actions they can take to respond to specific impacts as well as overall actions to prevent or lessen the impact of climate change. When presented with a list of actions that they can take the two popular options were popular waste disposal and awareness raising. Other options such as water harvesting, mangrove conservation, energy conservation and recycling may not be viable to individuals and communities as they are not aware of what steps to take to implement these actions. Communication encouraging individuals and communities to take action on climate change must provide specific information and support to implement those actions.

In communities where some actions such as reforestation, mangrove conservation and water harvesting are successfully implemented, actions have been successful because organizations with expertise have

engaged, educated and empowered communities to implement these practices. Communities need to be made aware of practices or actions that they can engage in and also be empowered to take these actions. They also need to understand how those actions will benefit them.

Existing, successful projects needs to be replicated and scaled in other communities. Where resources do not exist for replication and scale, there is need to document best practices and make these widely known so that communities who are desirous of starting their own initiatives can adopt some of the best practices.

It cannot be overstated that individuals and communities need to be able to see that their actions are positioned within a wide array of national and local level efforts by the country to prevent or lessen the impact of climate change. Government, NGOs', community organizations need to be at the forefront of communication in order to mobilize individuals and communities to take action.

It is important that Government ensure that there is stronger enforcement of existing environmental laws. Government needs to commit the necessary resources to ensure that laws are being enforced, and that there is stronger monitoring of ongoing developments that impact the environment.

4.4 Media Use

Individuals and communities are not consistently exposed to education and information on climate change. Only 39.2% of respondents indicated that they have listened, watched or read stories on climate change. However, a significant majority (85.2%) are interested in receiving information and education on climate change.

The best mass media option to reach individuals and communities with information is television. The majority of respondents identified this as the best source of information. Radio was not identified as a very popular source of information. Using the mass media will ensure that messages and information are widely disseminated and may impact knowledge and some attitudes. However, it will not be adequate to motivate individuals and communicates to take action.

A mix of mass media, social media and interpersonal communication is recommended to reach individuals and communities. Social Media campaigns using face book was identified during focus group discussions as an effective way to reach individuals, especially young people.

Community members indicated that interpersonal channels are very effective as they respond better to interventions that engage them and are sustained as opposed to those that are one off. In order to achieve this it is important to partner with organizations and groups already working in the community such as NGOs, community based organization, city and town councils, village councils, youth groups, church groups etc. Influential persons and popular opinion leaders in the community can also be engaged to disseminate information and motivate individuals to action. Community members indicated that they would be interested in information that is presented in creative ways such as videos, drama, music, art etc.

Messages must be attractive and simple with consistent reminders to communities of call to action and the benefits to communities. Initiatives to raise awareness and educate individuals and communities must also not be stand alone as they are less likely to be effective. Initiatives that are integrated into sporting activities, community events, community meetings, etc. are more likely to be effective.

Primary, secondary and tertiary level institutions have also been identified as an important target for increasing awareness and education.

5.0 Recommendations for Development of a National Communication Strategy on Climate Change

The primary purpose of the KAP study is to guide the development of a National Communication Strategy on Climate Change. Based on the findings of the KAP it is proposed that the following be considered in the development of the communication strategy.

1. A behaviour change communication approach: The strategy should be based on a behaviour change communication approach that targets specific changes in knowledge, attitudes and behaviours among specific target groups. It should be guided by a sound behaviour change model. An effective approach that can guide the development of the strategy is Communication for Behavioural Impact (COMBI). COMBI goes beyond traditional communication approaches but rather the mix of strategies in COMBI guarantees impact on knowledge, attitudes and behaviours of target audiences.

COMBI is a planning process for any communication, marketing or social mobilization efforts based on communication theories, behaviour change theories and social marketing. It posits that too often communication efforts place more emphasis on increasing awareness and knowledge which is not adequate to change behaviour and move people to action. In order to create meaningful change and motivate people to act, communication efforts must ensure a mix of communication approaches which seek not only to inform and educate but motivate change. The HICDARM which is one of the theories at the heart of COMBI ensures that communication actions outlined in the strategy developed, adequately target the entire process of changing behaviours.

BOX 3 • HICDARM AND BEHAVIOUR ADOPTION

First, we	**H** ear about the new behaviour
then, we become	**I** nformed about it
and later	**C** onvinced that it is worthwhile.
In time,	
we make the	**D** ecision to do something about our conviction
and later we take	**A** ction on the new behaviour.
We next await	**R** e-confirmation that our action was a good one
and if all is well, we	**M** aintain the behaviour!

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The Stages of Change theory/model can also be useful in informing specific communication actions that can move individuals and communities through the various stages of the behaviour change continuum.

Unaware	The person/community does not know there is a problem
Aware	The person/community realizes there is a problem
Concerned	The person/community gets concerned
Knowledgeable	The person /community learns more about the problem and how to change
Motivated to change	The person/community wants to change
Practicing trial behaviour	The person/community tries the new behaviour
Practicing sustained behaviour	The old behaviour has disappeared and the new behaviour is all we see

Stages of change model

2. Proposed Target Groups:

Based on the findings from the KAP the following should be the main target groups for the strategy:

- ✓ General Public: The general public can be targeted through mass and social media with basic information on climate change to increase knowledge on climate change and to create awareness of the issue.
- ✓ Youth including students, youth groups, youth organizations etc.
- ✓ Residents of coastal communities and communities in low lying areas
- ✓ Specific sectors: Agriculture, fishing, tourism

3. Knowledge, Attitudes and Behaviours to target: It is proposed that the following knowledge, attitudes and behaviours be the primary focus of the strategy:

Knowledge:

- ✓ What is climate change
- ✓ What causes climate change
- ✓ What changes are being experienced globally
- ✓ What changes are being experienced by Belize
- ✓ What changes can Belize expect
- ✓ What changes are being experienced by communities
- ✓ Actions government is taking to address climate change
- ✓ Actions communities are taking to address climate change
- ✓ Actions communities can take to address climate change

Attitude:

- ✓ Level of concern about climate change
- ✓ Appreciation of individual and community role in preventing or lessening impact of climate change
- ✓ Understanding that it is not only government's responsibility to act. Everyone can play a role
- ✓ Empowered to advocate where necessary

Behaviours/Practices:

- ✓ Individuals and communities taking positive actions to prevent or lessen impact of climate change
- ✓ Individuals and communities sharing success stories on actions
- ✓ Individuals and communities advocating for changes
- ✓ Individuals and communities engaged in education and awareness raising efforts

Proposed Key messages:

- ✓ Climate change is a global issue
- ✓ Climate change is affecting Belize
- ✓ Climate change is affecting our communities
- ✓ We should be concerned about climate change because it can affect our lives and livelihoods
- ✓ If we act now we can prevent or lessen the impact of climate change
- ✓ There are many actions Belize can take to prevent or lessen the impact of climate change
- ✓ There are many actions individuals and communities can take to prevent or lessen the impact of climate change

Proposed Key Channels :

- ✓ Mass media (television)
- ✓ Social Media (face book)
- ✓ Interpersonal Channels: community events, sporting events, video presentations/discussions, art, music, community theatre, popular opinion leaders, influential persons in communities, community leaders, community groups, NGOs and community based organizations, schools, churches etc.

6.0 References

Caribbean Community, 2006: Knowledge Attitudes and Practice Studies on Climate Change in the Caribbean: A Summary of Findings

Caribbean Community Climate Change Center/National Climate Change Center, 2015: A National Adaptation Strategy to address Climate Change in the Agriculture Sector

Government of Belize, 2015: Nationally Determined Contribution Under the United Nations Framework Convention on Climate Change

Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development, 2015: MCCAP Knowledge Attitudes and Practice Study Final Report

National Climate Change Center, 2005: Belize Climate Change Survey

Annexes

Annex 1: Survey Instrument

Climate Change Knowledge, Attitudes and Practice Survey- Japanese-Caribbean Climate Change Partnership Project		
Q1.	Name of Interviewer	
Q2.	Location:	District: _____ Name of Community: _____
Q3.	Date of Interview	
Introduction: Hello I am working on a study for the United Nations Development Programme. The purpose of the study is to collect information that will help to improve knowledge, attitudes, and behaviours of Belizeans towards climate change. I would like to ask you some questions about what you know or have observed about Belize's climate, how you feel about certain climate-related issues and what you do when it comes to disasters caused by differences in climate. Your answers are confidential and cannot be linked back to you. Your participation is completely voluntary and you may decline to answer any specific question or completely refuse to participate. The interview should take about 20 minutes of your time. We would greatly appreciate your help in responding to these questions.		
Section 1:Demographics		
Q4.	What is your sex?	1. Male 2. Female
Q5.	What is your age?	1. 18-24 3. 41-54 2. 25-40 4. 55-70 5. Older than 70
Q6.	What is your current occupation?	1. Domestic worker/housewife 2. Professional 3. Student 4. Technician 5. Service and Sales Worker 6. Armed Forces 7. Craft and related trade workers 8. Unemployed 9. Clerical Support Workers 10. Agriculture, Forestry and Fishery Workers 11. Manager/Supervisors/Business man/woman

Q7.	How many years have you lived in this community?	1. Less than a year 2. 1-5 years 3. 6-10 years 4. 10-20 years 5. All my life
Q8.	What is your highest level of education?	1. Primary Education 2. Secondary Education 3. Associates Degree 4. Master's Degree or higher 5. Other _____
Q9.	How many person , including you, reside in your household	1. I live alone 2. Less than 5 3. 5 to 10 persons 4. More than 10 persons
Q10.	Is your house situated near to a river-side, coastline, and low-lying area or on steep incline (hill or mountain)?	1. No 2. Yes- river 3. Yes- Coastline 4. Yes- low-lying area 5. Yes- steep incline
Q11.	What type of roofing material was used in the construction of your house?	1. Zinc/Metal roofing 5. Rubber Rye 2. Concrete roofing 6. Make Shift 3. Clay/concrete tiles 7. Other _____ 4. Thatch roofing
Q12.	What is the main construction material of the outer walls your house?	1. Wood 5. Plywood 2. Wood and concrete 6. Plycem 3. Concrete 7. Sheet Metal 4. Thatch 8. Brick 9. Other _____
Q13.	Do you own the house you live in?	1. Own 3. Lease 4. Other _____ 2. Rent

Q14.	Is the house you live in Insured?	1. Insured 2. Not insured 3. Don't know/Not sure			
Q 15.	If yes to Q 15 is it insured against climate related hazards such as hurricane, flooding or other natural hazards (threats)?	1. Yes 2. No 3. Don't know/Not Sure			
Knowledge of Climate Change					
Q16	Have you heard the term climate change?	1. Yes 2. No			
Q 17	What does climate change mean?	_____			
Q 18	Is climate change affecting your community?	1. Yes 2. No 3. Don't know/Not sure			
Q 19	Do you think the following is/are associated with climate change?		Yes	No	Don't Know/Not sure
		1. Changing weather patterns (more rainfall, hotter periods etc.)			
		2. Increase in sea surface temperature and coral bleaching			
		3. Stronger and more frequent hurricanes			
		4. Sea level rise			
		5. Increase in air temperatures			
		6. Erosion along the coast			
		7. Landslides			
		8. Flooding			

		9. Differences in seasonality of crops			
		10. Increase in insect pests			
		11. Decrease in fish stock			
		12. Melting of the ice caps at the poles			

Q 20	Has your community been affected by any of the following over the past 10 years?		Yes	No	Don't Know/Not sure
		1. Changing weather patterns (more rainfall, hotter periods etc.)			
		2. Increase in sea surface temperature and coral bleaching			
		3. Stronger and more frequent hurricanes			
		4. Sea level rise			
		5. Increase in air temperatures			
		6. Erosion along the coast			
		7. Landslides			
		8. Flooding			
		9. Differences in seasonality of crops			
		10. Increase in insect pests			
		11. Decrease in fish stock			
		12. Increase in vector borne/water borne diseases			
Q21	What are the main causes of climate change? (Circle all that apply)	1. Burning fossil fuels such as coals, oils and natural gases 2. Transportation such as driving a car, bus or boat (vehicle emission) 3. Cutting down trees and mangroves 4. Poor industrial practices (improper waste disposal, factory emission etc.) 5. Electricity generation 6. Improper garbage disposal			

		7. Climate change is just a natural occurrence 9. Acts of the Creator 10. Don't know/Not sure
Attitude to Climate Change		
Q22.	How concerned are you about climate change?	1. Very concerned 3. Not concerned 2. Somewhat concerned 4. Don't know/Not Sure

Q23. Do you think any of the following are important in helping the community prevent the impact of climate change?

	Not important	Somewhat important	Very important	Don't know/Not sure
1.Comply with environmental laws				
2.Build structures to protect the coast				
3.Conserve energy and natural resources				
4.Encourage water conservation and reuse				
5.Discourage construction of new settlements in coastal areas/relocation of vulnerable coastal settlements				
6. Decrease deforestation				
7. Increase reforestation				
8. Increase public awareness of climate change issues				
9.Encourage and promote community participation				
10. Disaster management plans				

Q 24.	State your level of agreement with the following statements		Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't know/Not sure
		1.Community leaders are taking actions to address the impacts of climate change on communities						
		2.Central government is taking action to address the impacts of climate change on communities						
		3.Community members are taking action to address the impacts of climate change on the community						
		4.I am prepared to do whatever I can to help to preserve the environment						
		5.There is nothing a small country like Belize						

		can do about climate change									
Q 25.	Rank the following climate change issues in order of importance from 1- 10 in terms of how you believe they affect your community In the ranking, use "1" represents the most important and "10" represents the least important	1. Changing weather patterns	1	2	3	4	5	6	7	8	9	10
		2. Stronger and more frequent hurricanes	1	2	3	4	5	6	7	8	9	10
		3. Increase in sea surface and coral bleaching	1	2	3	4	5	6	7	8	9	10
		Increase in air temperature										
		4. Sea level rise	1	2	3	4	5	6	7	8	9	10
		5.Coastal erosion	1	2	3	4	5	6	7	8	9	10
		6.Seasonality of crops	1	2	3	4	5	6	7	8	9	10
		7.Landslides	1	2	3	4	5	6	7	8	9	10
		8.Flooding	1	2	3	4	5	6	7	8	9	10
		9.Increase in vector borne/water borne diseases	1	2	3	4	5	6	7	8	9	10
		10.Decrease in fish stock	1	2	3	4	5	6	7	8	9	10
Q26	Who do you think is mainly responsible for addressing	1. Government 2. Businesses/Industry 3. Community organizations 4. Private citizens 5. United Nations 6. Industrialized countries										

	climate change in Belize? (circle all that apply)	7. Everyone 8. Don't know/Not sure
Q27	Are you interested in finding out more about the impact of climate change on Belize?	1. Very interested 2. Somewhat interested 3. Not interested 4. Don't know/Not sure
Practices related to climate change		
Q28.	Have you or the community taken any actions to lessen the impact of climate change?	1. Yes 2. No 3. Don't Know/Not Sure
Q29	Which of the following actions have been taken or can be taken by you or your community to lessen or prevent the impact of climate change in the community? (Circle all that apply)	1. Water harvesting 7. Disaster management plans 2. Observe building codes 8. Conserve energy 3. Building sea walls 9. Carpooling /taking public transportation 4. Mangrove conservation 10. Reuse and recycle waste 5. Reforestation (planting trees) 11. Raise Awareness 6. Proper waste disposal/composting 12. Not cutting down trees/forests
Q30	Which of the following actions have been taken by government to lessen or prevent the impact of climate change in the community?	1. Reduce use of fossil fuel (coal, oil, natural gas) use 2. Implement energy efficient measures in the industrial and commercial sectors 3.Increase research and development of renewable energy technologies 4. Provide support to agriculture sector to improve crop performance 5. Increase public awareness of climate change issues 6. Early warning systems for health-related impacts (such as dengue) 7. Flood warning systems 8. Enforce building code

Q31	If you or your community have not taken any action, what has prevented you from taking action to prevent or lessen the impact of climate change on your community?	1. Do not have enough information about climate change 2. Not aware of what actions can/should be taken 3. Climate change is not a concern in the community 4. It is not our responsibility to take action 5. Other _____
Media Use		
Q32	How often do you read /listen to/ watch stories on climate change?	1. Very Often 2. Occasionally 3. Rarely 4. Never 5. Don't know/Not sure
Q33	Would you like to read/watch/listen to stories on climate change?	1. Yes 2. No 3. Don't know/Not sure
Q34	Where do you get your information on climate change? (Circle all that apply)	1. Television 2. Radio 3. Newspapers 4. Websites/Internet 5. Community groups 6. Lectures/Workshops 7. Pamphlets/Brochures 8. Posters 9. Videos 1/0 10. Schools 11. Friends/Family 12. Faith-based organization 13. Government 14. Non-governmental organizations 15. I get no information on Climate Change 15. Other (specify) _____
Q35	Which are the three most effective ways to get information on climate change to your community?	1. Television 2. Radio 3. Newspapers 4. Websites/Internet 5. Community groups 6. Lectures/Workshops 7. Pamphlets/Brochures 8. Posters 9. Videos 1/0 10. Schools 11. Friends/Family 12. Faith-based organization 13. Government organizations 14. Non-governmental organizations

		15. Other (specify) _____
Q36	Which radio stations do you listen to most?	1. Love FM 2.Estereo Amor 3. Krem FM 4. More FM 5. Wamalali 6. Fiesta FM 7. Radio Bahia 8. None 9. Other (please list):
Q37	Do you own or have access to a television?	1. Yes 2. No
Q38	Do you have access to the Internet?	1. Yes 2. Sometimes 3. No

Annex 2: Focus Group Discussion Guide

Topic One – What is Climate Change?

a) When you hear the words "climate change"– what immediately comes to your mind? What does climate change mean to you? (Probe: Why is climate change happening?)

b) What in your view is causing climate (weather) change? Why is it occurring?

c) What types of changes do you think climate change will bring or is bringing already? (Note: this should lead into a general discussion on impacts – such as increased storms, drought, rainfall, and so forth)

d) What types of climate change impacts have you observed personally or experienced directly? What was the result of this experience?

e) What types of impact has climate change had on your community? What impact have these changes in weather had?

f) What do you think will happen if these impacts continue to occur and are not addressed?

Topic Two – What Risks are involved in Climate Change?

a) We are all affected by the weather. Climate change will affect everyone in Belize, but some people will be more at risk than others if we have increased storm intensity, drought, flooding and so on. Who do you think is most at risk from climate change impacts in your community? (this should start a discussion about vulnerable groups such as disabled, aged – but should also lead into some analysis of persons who live in homes of poor construction quality, or who live in hazard prone areas that are either on steep slopes, too close to the sea or wetlands, and so forth). Why do you think they are most at risk?

b) How at risk do you feel you are personally? Why?

Topic Three – What can be done to reduce climate risk?

a) What steps are you taking in your own life to reduce climate impact? If you are not, what is holding you back?

What steps, if any, are vulnerable groups in your community taking to limit climate change impacts? If they are not, what reasons are holding them back?

c) Some of the steps and measures that do exist to help make households more climate resilient can cost money. How would you go about getting the money to make your home or business climate ready? (probe: do you know of any sources of credit or finance for climate readiness?)

d) If a climate disaster happened tomorrow, what type of insurance would you have to cover your loss?

e) How many people in your community do you think have some type of insurance for floods, droughts, storms or hurricanes? If people don't have insurance, why?

Topic Four – Who has a role and responsibility to help improve our climate resilience?

a) In order for Belize to get ready for climate change – everyone will need to be involved and play a role. What role should the government play in helping to make Belize more climate ready? Who in the government needs to be involved?

b) What types of programmes or projects do you know about that the government is already doing to help make us more climate resilient?

c) What role should individuals and communities play in helping Belize get ready? What type of responsibility do you have and the people in your community?

d) What things, if any, do you think we can do to make sure that we don't add or contribute to climate change?

Topic 5: Media use

What do you think are some of the best ways to reach people with messages on climate change?

What are the types of messages/ads/campaigns that would get people's attention?

What are the types of messages/ads/campaigns that would really move people to take action on climate change?

Do you have examples of some messages/materials/ads/campaigns that really got your attention? What was the issue? Why did it capture your attention? What did it change for you? (knowledge, attitude, practice)

What is your most trusted source of information?