BIBLIOGRAPHY

DACUS, NORBERT JR. A. APRIL, 2012. Indigenous Climate Change Vulnerability Assessment in Buguias, Benguet. Benguet State University La Trinidad Benguet.

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ABSTRACT

The municipality of Buguias in the province of Benguet is vulnerable to climate change. This resulted from the study that assessed the indigenous vulnerability indicators observed by selected residents in Buguias relative to climate change. It also included the problems brought about by the aforesaid indicators, and the mitigating measures undertaken by the community residents.

Conducted in all the fourteen barangays of Buguias, the study involved 42 key informants who have stayed in the community for at least 50 years. Administration of questionnaires and conducted of interview among the respondents were undertaken in October 2012. Data analysis started with the review and consolidation of the answers of key informants. Percentage, frequency distribution and mean were integrated in the descriptive presentation of data.

As to the findings of the study, the respondents are very much aware on climate change. They learned about climate change through actual observation and documentation of events; news/trivia on climate change from the radio; television and audio-visual

documentaries; seminars, trainings and workshops; family members; relative and friends; and newspapers/magazines.

The respondents highly believe that their community is vulnerable to climate change. This is so because of the following indicators: extreme variations in temperature, which is characterized as too hot during the day and too cold during the night; prolonged wet season; emergence of various pests/diseases; occurrence of stronger typhoons; occurrence of heavy rains; unpredictable weather conditions; and occurrence of hailstorm.

Subsequently, the community residents encountered problems relative to the observed indicators of climate change. Extreme variations in temperature resulted to limited number of working hours in the farm; stunted growth of vegetable crops; reduced water holding capacity of soil, and exposure of farmers to health hazards.

Another indicator of the vulnerability of the community to climate change is the occurrence of prolonged wet season. Such problem led to flooding in the lower areas of their community resulting to loss of crops; rotting of potato tubers and other root crops, and leaching of soil nutrients. Furthermore, occurrence of heavy rains accordingly resulted to soil erosion, and adverse effect on the growth of plants. Unpredictable weather conditions in the community also resulted to unfinished/postponed works, abrupt change in the work plan of farmers, increased number of pests and diseases, and decreased quality of fruits and vegetables. The emergence of pests and diseases, as indicator of climate change, eventually resulted to low yield of crops, and insufficient supply of food. It also increased the dependence of farmers on pesticides.

Besides, occurrence of strong typhoons resulted to heavy crop loss, landslides, and electricity breakdown (brownouts/blackouts). Lastly, hailstorms destroyed crops and even livestock.

Relative to the climate change indicators and problems encountered, the residents administered various adaptability measures. To evade from the extreme variations in temperature, the respondents accordingly changed their work schedules, tried shifting to other crops and/or varieties which are tolerant to the prevailing temperature in the area, used of indigenous mulch to regulate evaporation of moisture from the soil; and shifted into managing sari-sari stores.

The other mitigating measures include planting of waterlog-resistant crops, constructing greenhouses, adjusting farm activities, rescheduling of planting season, multiple cropping, programming alternative work schedules much more on land preparation and planting, planting resistant varieties, multiple cropping, integrated pest management, and organic farming. The farmers were accordingly helpless during typhoons. Nevertheless, they accordingly planted trees to serve as windbreakers. They also believed that the presence of trees helps control erosion. Only one respondent claimed that hailstorm has been regularly occurring. As a mitigating measure, he accordingly built a greenhouse to safeguard his crops. He also used nets, sacks and cellophane to appropriately protect his crops.

As to the recommendations, the farmers should continuously observe and document the indicators of climate change in their community for reference among future generation; the community residents should remain vigilant over the ill-effects of climate change; the indigenous climate change mitigating measures undertaken by the community residents

may be shared to neighboring communities for probable replication; and similar studies on climate change, with more comprehensive tools and parameters, should be conducted to verify the results of the study and to give clearer pictures on such phenomenon.

RESULTS AND DISCUSSION

This section presents the profile of the respondents as to their personal information. It also reflects their level of awareness on climate change and source of information as to the indicators observed in the community on extreme variations in temperature, prolonged wet season, occurrence of heavy rains, unpredictable weather condition, emergence of various plant pest/diseases, occurrence of stronger typhoons and regular hailstorm. Moreover, the problems encountered by the residents relative to the indicators and the adaptability measures to counter the ill-effects of climate change are also included.

Profile of Respondents

The profile of the respondents as to age, civil status, gender, highest educational attainment, households' source of income and number of years in the community is shown in Table 1.

The respondents have ages ranging from 50-75 years old. Their mean age is 51. This shows that the people in the community are considerably old enough to have observed and/or compared changes in the agriculture and environment.

As shown in the table, majority of the respondents are males and almost all are married. Of the 42 respondents, fifteen are females, four are single and one is widowed. Results imply that the respondent in the community are not dominated by males but when the study was conducted almost all males are interested to answer the questions than the females.

All the respondents have gone to school but only five were able to finish college. According to the respondents who did not finish college, they were constrained by financial problems.

Table 1. Profile of the respondents

PROFILE	NO. OF RESPONDENTS (N=42)	PERCENTAGE (%)
a. Age		
50-55	29	69.05
56-60	8	19.05
61-65	4	9.52
66-70	-	-
71-75	1	2.38
TOTAL Mean Age = 51	42	100.00
b. Civil Status		
Married	37	88.10
Single	4	9.52
Widowed	1	2.38
TOTAL	42	100.00
c. Gender		
Male	27	64.29
Female	15	35.71
TOTAL	42	100.00

Table 1. Continued…

PROFILE	NO. OF RESPONDENTS (N=42)	PERCENTAGE (%)

d. Educational Attainment

No schooling	-	-
Elementary Undergraduate	8	19.05
Elementary Graduate	9	21.43
High school Undergraduate	7	16.67
High school graduate	12	28.57
College Undergraduate	1	2.38
College Graduate	4	9.52
Post Graduate	1	2.38
TOTAL	42	100.00

e. Household main Source of Income

Pension/allotments	1	2.38
Remittance from abroad	-	-
Crop production	33	78.57
Livestock raising	1	2.38
Sari-sari store	1	2.38
Vegetable marketing	6	14.29
TOTAL	42	100.00

Table 1. Continued…

PROFILE	NO. OF RESPONDENTS (N=42)	PERCENTAGE (%)
f. No. of years Living in the Community		
50-60	37	88.10
61-70	4	9.52
71-80	1	2.38
TOTAL	42	100.00

The table also shows that almost 80% of the respondents derived their income from crop production. Each of the three respondent lives through pension/allotments, livestock raising and sari-sari store.

As to the number of years of living in the community, almost all of the respondents lived in their respective communities from 50 to 60 years. Few respondents have been in the community from 61-70 years. Only one respondent has been in the community for at least 71 to 80 years.

Awareness on Climate Change

Table 2 shows the level of awareness of the respondents on climate change, and their sources of information.

Regarding the level of awareness, almost all the respondents are very much aware on climate change. There are four respondents who were moderately aware on climate change. Results imply that everybody is aware of climate change.

Table 2.Level of awareness on climate change and source of information

AWARENESS	NO. OF RESPONDENTS (N=42)	PERCENTAGE (%)
a. Level of Awareness on Climate Change		
Very much aware	38	90.48
Moderately aware	4	9.52
Not aware	-	-
TOTAL	42	100.00
b. Source of information		
Trough members of the family	1	2.38
Trough relatives and friends	1	2.38
By hearing news/trivia from the radio	16	38.10
By watching the television and audio-visual documentaries	9	21.43
By reading newspaper, magazines	1	2.38
By attending seminars, training, workshops	6	14.29
Actual observation and documentation of events	37	88.10

Note: Multiple responses

The findings relate to the claim of weber (2010) that raising climate change awareness leads to knowledge, which increases the livelihood of action. In the United States, public concern over the potential ramification of climate change has dipped in the past few years.

As to the sources of information, almost 90% of the respondents mentioned actual observation and documentation of events. Some respondents revealed that they heard news/trivia on climate change from the radio. The other sources of information, in a descending order, are television and audio-visual documentaries; seminars, trainings and workshops; family members; relatives and friends; and newspapers/magazines. Results imply that climate change is not a strange phenomenon.

As cited by Morton (2011), issues arising in relation to how information is transmitted to the public revolved primarily around the groups that present it; the media, while being considered by all interviewees to play both a positive and negative role in informing the public, was also associated with its own agenda, mainly pertaining to the political learning's of individual media entities.

Vulnerability to Climate Change

As shown in Table 3, almost all of the respondents highly believe that their community is vulnerable to climate change; few respondents moderately believed. According to these respondents, they are confused whether the changes they have observed are due to climate change or it's just a natural phenomenon. Regardless of what caused the changes, all the respondents believed that their community is vulnerable since they have observed the indicators.

Table 3.Perception on vulnerability of community to climate change

PERCEPTION	NO. OF RESPONDENTS (N=42)	PERCENTAGE (%)
Highly believe that their Community is vulnerable	35	83.33
Moderately believe that their community is vulnerable	7	16.67
TOTAL	42	100.00

Indigenous Climate Change Vulnerability Indicators in the Community

Table 4 shows the indicators of climate change observed by the respondents in the community. Almost all of the respondents mentioned that the community has extreme variations in temperature, which is characterized as too hot during the day and too cold during the night. In a descending order of preference, the other indicators observed are as follows: prolonged wet season (the usual number of dry months are shortened), emergence of various plant pests/diseases, occurrence of stronger typhoons, occurrence of heavy rains (when it rains, it pours heavily and with prolonged hours), unpredictable weather conditions (instant occurrence of rains even during a sunny day) and regular hailstorm. According to the respondents, the foregoing indicators prove that there is climate change; and their community is vulnerable to such changes.

The findings relate to the claim of the Tebtebba Foundation (2009) that though indigenous people have the least contribution to climate change as result of their harmonious interaction with their environment, they would be one of the most affected groups by climate change because they inhabit fragile environment.

Table 4. Indicators of climate change

INDICATORS	NO. OF RESPONDENTS (N=42)	PERCENTAGE (%)
Extreme variations in temperature (too hot during the day and too cold during the night)	38	90.48
Prolonged wet season (the usual numbers of dry month are shortened)	26	61.90
Occurrence of heavy rains (when it rains, it pours heavily and with prolonged hours)	8	19.05
Unpredictable weather conditions (instant occurrence of rains even during a sunny day)	2	4.76
Emergence of various plant pests/diseases	24	57.14
Occurrence of stronger typhoons	9	21.43
Regular hailstorm	1	2.38

Note: Multiple responses

Problems Encountered Relative to the Indicators of Climate Change

The problems encountered by the residents relative to the indicators of climate change are shown in Table 5. As to extreme variations in temperature, majority of the respondents cited that it resulted to limited number of working hours in the farm. According to the respondents, they work on their farms when the heat of the sun is still tolerable. The other problems, in a descending order of gravity, are stunted growth of vegetable crops, reduced

water holding capacity of soil, and exposure of farmers to health hazards. The findings support the claim of the Food and Agriculture Organization (2006) that climate change would have various effects not only on the natural system but also on the communities that depend on biodiversity for their existence.

Table 5. Problems encountered relative to the indicators of climate change

INDICATOR/PROBLEMS	NO.OF RESPONDENTS (N=42)	PERCENTAGE (%)
a. Extreme variation in temperature		
Limited working hours in the farm due to extremely hot temperature	24	57.14
Stunted growth of vegetable crops	15	35.71
Reduced water holding capacity of soil (soil easily dries)	10	23.81
Brings health hazard among farmers	1	2.38
b. Prolonged wet season		
Rotting of potato tubers and other root crops	14	33.33
Leaching of soil nutrients	6	14.29
Flooding resulting to loss of crops	22	52.38
c. Occurrence of heavy rains		
Soil erosion (landslides/mudslides)	9	21.43
Adversely affect plant growth	1	2.38

Note: Multiple responses

Table 5. Continued…

INDICATOR/PROBLEMS	NO.OF RESPONDENTS (N=42)	PERCENTAGE (%)
d. Unpredictable weather conditions		
Unfinished or re-scheduled works	2	4.76
Abrupt change of work plan	2	4.76
Increasing number of pest/diseases	2	4.76
Decreased quality of fruits and vegetable (abnormal size)	2	4.76
e. Emergence of various plant pests diseases		
Low yield of crops	24	57.14
Insufficient supply of food for human and livestock	3	7.14
increased dependence on pesticides to control pest/disease	10	23.81
f. Occurrence of stronger typhoons		
Mudslides and landslide	8	19.05
Heavy crop loss	9	21.43
Electricity breakdown (Brownouts/blackout)	2	4.76
g. Regular hailstorm		
Destroy leaves of vegetables	1	2.38
Destroy fruits/flowers of crops	1	2.38
Causes death of young livestock	1	2.38

Note: Multiple responses

Another indicator of the vulnerability of the community to climate change is the occurrence of prolonged wet season. According to the respondents, such problem leads to flooding in the lower areas of their community resulting to loss of crops. There were some respondents who cited rotting of potato tubers and other root crops, and leaching of soil nutrients as the problems encountered from the foregoing indicator.

The occurrence of heavy rains accordingly resulted to soil erosion as claimed by nine respondents. One respondent elaborated that the heavy rains adversely affected the growth of his plants. On the other hand, there two respondents who claimed that the unpredictable weather conditions in their community resulted to unfinished/postponed works, abrupt change in their work plan, increased number of pests and diseases, and decreased quality of fruits and vegetables.

Furthermore, the emergence of pests and diseases, as indicator of climate change eventually resulted to low yield of crops, and insufficient supply of food. Accordingly, it also increased the dependence of farmers on pesticides. As claimed by one of the respondent in barangay Loo if he is going to compare his previous observation at present in the emergence of pest and diseases, he observed that in the past years he was able to maintain the quality of vegetables and produce more volume of crops even with the use of fewer inputs of pesticide. But at present because of these ill-effects of climate change he needed to use more inputs in spraying pesticide for him to produce and maintain the quality and volume of vegetables that is needed to produce enough supply of food for human and livestock.

Besides, few respondents stated that occurrence of strong typhoons resulted to heavy crop loss, landslides, and electricity breakdown (brownouts/blackouts). Findings relate to the

statement of Jabines and Inventor (2007) that climate change is projected to exacerbate the misery and predicament of the country's already over-burdened populace and amplify the different socioeconomic burdens already shouldered by Filipino families, such as hunger and water scarcity.

As discussed earlier, there was one respondent who claimed that one change in their community is the occurrence of regular hailstorm (locally called dadal-lo). According to the respondent, hailstorms destroy crops and even livestock. He narrated that one time; a hailstorm caused death among his chicks and even puppies.

The foregoing findings imply that the indicators of climate change as observed by the residents brought more adverse effects than favorable things. As claimed by the Food and Agriculture (2010), the unpredictable and year round rains, landslides, and frost damage forced farmers to use more inputs, which eventually increased production costs.

Figure 5 shows a farmer in Loo, Buguias spraying pesticides to control pests and/or diseases.

Figures 5. A farmer in Loo, Buguias, Benguet sprays pesticide to counter the emergence of pest and diseases

Adaptability Measures to Counter the
Ill-Effects of Climate Change

Table 6 reflects the adaptability measures undertaken by the farmers to counter the ill-effects of climate change in their community. As presented in the foregoing section, there are several indicators of climate change enumerated by the respondents. The first indicator is extreme variations in temperature. According to the respondents, this is characterized by extremely cold temperature in the morning/evening and extremely hot during the day. To evade from such problem, majority of the respondents accordingly changed their work schedules. The respondents elaborated that they work in their farms early in the morning and look for shelter at around 10 O'clock when the heat of the sun is extremely hot. They resume their farm activities at around 2 O'clock when the heat from the sun is no longer threatening.

On the other hand, some respondents claimed that they tried shifting to other crops and/or varieties which are tolerant to the prevailing temperature in the area. Few respondents revealed that they used indigenous mulch to regulate evaporation of moisture from the soil. At least 3 respondents accepted to have shifted into managing sari-sari stores since they can no longer maximize their farm production due to the extreme variations in temperature. As to the problem on prolonged wet season due to extended number of rainy days, the greatest number of respondents explained that they planted waterlog-resistant crops. Those who are financially capable were able to construct greenhouses. These farmers, however, claimed that the cost of the structure is an additional burden.

Table 6. Adaptability measures to counter the ill-effects of climate change

INDICATOR/MEASURES	NO. OF RESPONDENTS (N=42)	PERCENTAGE (%)
a. Extreme variation in temperature		
Changes in work schedule	24	57.14
Shifting to other source of income (like farming to sari-sari store)	3	7.14
Using new varieties of crop resistance to prevailing temperature	15	35.71
Use of mulch on crops	7	16.67
b. Prolonged wet season		
Planting of waterlogged- resistant varieties	26	61.90
Planting of crops in green houses	12	28.57
c. Occurrence of heavy rains		
Adjust schedule of planting	8	19.05
Multiple cropping	7	16.67
d. Unpredictable weather condition		
Controlling the plant environment using green houses	2	4.76
Alternative plans on work schedule	2	4.76
Planting weather resistant varieties of crops	2	4.76

Note: Multiple responses

Table 6. Continued…

INDICATOR/MEASURES	NO. OF RESPONDENTS (N=42)	PERCENTAGE (%)
e. Emergence of various plant/pests		
Practices integrated pest managements (IPM)	7	16.67
Change in cropping system (multi-Cropping, zoning etc.)	24	57.14
Practice organic farming	3	7.14
Use nitrogen fertilizer and manure	3	7.14
f. Occurrence of strong typhoons		
Plant more trees	9	21.43
Planting bamboos to control erosion	7	16.67
Planting coffee	1	2.38
g. Regular hailstorm		
Planting crops in green houses	1	2.38
Using net to cover the crops	1	2.38
Using sacks to cover the crops	1	2.38
Using plastic cellophane on seedbed	1	2.38

Note: Multiple responses

Another indicator of climate change, as claimed by at least eight respondents, is the occurrence of heavy rains. According to these respondents, rains have higher intensity if they were to compare it with previous observations. One respondent said “rains nowadays are scary.” Since they cannot control the occurrence of heavy rains, the farmers merely adjusted their farm activities. All the eight respondents claimed to have rescheduled their planting season and the others accordingly integrated multiple cropping in their farm. According to most of the farmers, such remedial measures did not really solve the problem but at least it lessened.

Regarding the unpredictability of weather conditions, two respondents claimed to have constructed greenhouses in order to control the environment of their crops. Few respondents were also smart enough to have programmed alternative work schedules much more on land preparation and planting. Another two respondents cited planting resistant varieties.

Changes in the climate also resulted in the emergence of various plant pests and diseases. As such, the greatest number of respondents claimed to have practiced multiple cropping. Moreover, few respondents accordingly practiced Integrated Pest Management (IPM) and organic farming.

The farmers were accordingly helpless during typhoons. Nevertheless, they accordingly planted trees to serve as windbreakers. They also believed that the presence of trees helps control erosion. Only one respondent claimed that hailstorm has been regularly occurring. As a mitigating measure, he accordingly built a greenhouse to safeguard his crops. He also used nets, sacks and cellophane to appropriately protect his crops. Figure 6 show sample of net.

The findings showed that in their own capacities, the farmers came up with some indigenous measures that can mitigate the effects of climate change in their respective communities. It may not be very effective and/or efficient, but at some instance it motivated them to continue their agricultural activities despite the prevailing changes. Figures 7 and 8 show samples of greenhouse.

According to the United Nations acknowledged during the climate change conference in Bali, Indonesia that among other things, there is a need for enhanced action on adaptation and the provision of financial resource for it. This, in return, implies the need for financial and technology transfer from the rich to the poor countries. In general, most developing in Asia have the least capacity to adapt to climate change and are therefore in need of whatever external support they can get to build their capacity (Francisco, 2008).

Figure 6. A net used by the farmers in Barangay Bangao to protect his crops from adverse effects of climate change

Figure 7. A sample of greenhouse used by the residents of Barangay Baculongan Norte to protect their crops during the occurrence of heavy rains and hailstorm

Figure 8. A farmer in Barangay Baculongan Norte working inside his greenhouse

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The study assessed the indigenous vulnerability indicators observed by selected residents in Buguias relative to climate change. It also included the problems brought about by the aforesaid indicators, and the mitigating measures undertaken by the community residents.

Conducted in all the fourteen barangays of Buguias, the study involved 42 key informants who have stayed in the community for at least 50 years. Administration of questionnaires and conducted of interview among the respondents were undertaken in October 2012. Data analysis started with the review and consolidation of the answers of key informants. Percentage, frequency distribution and mean were integrated in the descriptive presentation of data.

As to the findings of the study, almost all of the respondents are very much aware on climate change. Almost 90% of the respondents learned about climate change through actual observation and documentation of events. Some respondents revealed that they heard news/trivia on climate change from the radio. The other sources of information, in a descending order, are television and audio-visual documentaries; seminars, trainings and workshops; family members; relative and friends; and newspapers/magazines.

Almost all of the respondents highly believed that their community is vulnerable to climate change. This is so because of the following indicators: extreme variations in temperature, which is characterized as too hot during the day and too cold during the night; prolonged wet season; emergence of various pests/diseases; occurrence of stronger typhoons; occurrence of heavy rains; unpredictable weather conditions; and occurrence of hailstorm.

Subsequently, the community residents encountered problems relative to the observed indicators of climate change. As to extreme variations in temperature, majority of the respondents cited that it resulted to limited number of working hours in the farm. According to the respondents, they work on their farms when the heat of the sun is still tolerable. The other problems, in a descending order of gravity, are stunted growth of vegetable crops, reduced water holding capacity of soil, and exposure of farmers to health hazards.

Another indicator of the vulnerability of the community to climate change is the occurrence of prolonged wet season. According to the respondents, such problem leads to flooding in the lower areas of their community resulting to loss of crops. There were some respondents who cited rotting of potato tubers and other root crops, and leaching of soil nutrients as the problems encountered from the foregoing indicator.

The occurrence of heavy rains accordingly resulted to soil erosion as claimed by nine respondents. One respondent elaborated that the heavy rains adversely affected the growth of his plants. On the other hand, there two respondents who claimed that the unpredictable weather conditions in their community resulted to unfinished/postponed works, abrupt change in their work plan, increased number of pests and diseases, and decreased quality of fruits and vegetables.

Furthermore, the emergence of pests and diseases, as indicator of climate change, eventually resulted to low yield of crops, and insufficient supply of food. Accordingly, it also increased the dependence of farmers on pesticides. Besides, few respondents stated that occurrence of strong typhoons resulted to heavy crop loss, landslides, and electricity breakdown (brownouts/blackouts). One respondent claimed that one change in their community is the occurrence of regular hailstorm (locally called dadal-lo). According to

the respondent, hailstorms destroy crops and even livestock. He narrated that one time; a hailstorm caused death among his chicks and even puppies.

Relative to the climate change indicators and problems encountered, the residents administered various adaptability measures. To evade from the extreme variations in temperature, majority of the respondents accordingly changed their work schedules. The respondents elaborated that they work in their farms early in the morning and look for shelter at around 10 O'clock when the heat of the sun is extremely hot. They resume their farm activities at around 2 O'clock when the heat from the sun is no longer threatening. On the other hand, some respondents claimed that they tried shifting to other crops and/or varieties which are tolerant to the prevailing temperature in the area. Few respondents revealed that they used indigenous mulch to regulate evaporation of moisture from the soil. At least 3 respondents accepted to have shifted into managing sari-sari stores since they can no longer maximize their farm production due to the extreme variations in temperature.

As to the problem on prolonged wet season due to extended number of rainy days, the greatest number of respondents explained that they planted waterlog-resistant crops. Those who are financially capable were able to construct greenhouses. These farmers, however, claimed that the cost of the structure is an additional burden.

Another indicator of climate change, as claimed by at least eight respondents, is the occurrence of heavy rains. According to these respondents, rains have higher intensity if they were to compare it with previous observations. One respondent said "rains nowadays are scary." Since they cannot control the occurrence of heavy rains, the farmers merely adjusted their farm activities. All the eight respondents claimed to have rescheduled their planting season and the others accordingly integrated multiple cropping in their farm.

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The farmers were accordingly helpless during typhoons. Nevertheless, they accordingly planted trees to serve as windbreakers. They also believed that the presence of trees helps control erosion. Only one respondent claimed that hailstorm has been regularly occurring. As a mitigating measure, he accordingly built a greenhouse to safeguard his crops. He also used nets, sacks and cellophane to appropriately protect his crops.

Conclusions

Based on the findings, the following conclusions are made:

1. The level of awareness on climate change among people even in the remote barangays of Buguias in the municipality of Benguet is high. This is because they have access on various Information, Education and Communication (IEC) materials;

2. Their perception on the changes occurring in their community is evidenced by the indicators they have been observing and recording. In other words, these farmers have indigenous ways of assessing the vulnerability of their community to climate change;

3. The farmers perceived more ill-effects of climate change as compared to favorable ones; and

4. Mitigating climate change is instinctive. This means that even before the sophisticated technologies of mitigating climate change, people in the rural areas have their own ways and means of countering the ill-effects of climate change.

Recommendations

The following recommendations are put forward:

1. The farmers should continuously observe and document the indicators of climate change in their community for reference among future generation;

2. The community residents should remain vigilant over the ill-effects of climate change;

3. The indigenous climate change mitigating measures undertaken by the community residents may be shared to neighboring communities for probable replication; and

4. Similar studies on climate change, with more comprehensive tools and parameters, should be conducted to verify the results of the study and to give clearer pictures on such phenomenon.

LITERATURE CITED

ALMORA, S. 2008. Buguias comprehensive land use plan. Municipality of Buguias, Province of Benguet. Pp 16, 20.

BAY-AN, C. 1990. Buguias municipal planning team research. Municipality of Buguias, Province of Benguet. Pp 32, 35.

BURGONIO, T. 2008. RP biggest victim of climate change-Filipino NASA physicist. Retrieved September 08, 2012 from http://newsinfo.inquirer.net/breaking news/nation/view/20080912-160281/ RP-biggest victim-of-climate-change-Filipino-NASA- pyhsicist.

FOOD AGRICULTURE ORGANIZATION. 2006. Gender, The Missing Component of the Response to climate change. Retrieved September 08, 2012 from www.fao.org /docrep/010/i0170e/i0170e00.htm.

FOOD AGRICULTURE ORGANIZATION. 2010. Climate Change and Health. Retrieved September 12, 2012 from http:/www.greenpeace.org/raw/content/seasia /en/press/reports/the Philippines-a-climate-hot.pdf.

FRANCISCO, H. A. 2008. Adaptation to climate change: Needs and Opportunities in Southeast Asia. Asean economic bulletin. 25(1).

FRANCISCO, H. A. 2010. Strengthening the Philippines Institutional Capacity to Adapt Climate Change. 2010. Project funded by Millennium Development Goal Fund. Pp 34, 40.

FUSEL and KALVIN, 2004. Adaptation and Vulnerability Assessment. In southeast asia. Pp 62, 65.

MCCARTHY J.; O. CANZIANI; N. LEARY; D. DOKKEN; and K. WHITE (Eds), 2001. Impacts, Adaptation, and Vulnerability. Intergovernmental panel on climate change Cambridge University Press. Cambridge. Pp 42, 60.

JABINES, A. and J. INVENTOR. 2007. The Philippines: A Climate Hotspot Climate Change Impacts and the Philippines. Greenpeace Southeast Asia. Pp 64, 67.

LA-ONGAN, J. B. 2012. Coping Mechanism of Swamp Farmers Towards Climate Change in La Trinidad. Unpublished Undergraduate Thesis. Pp 41, 44.

MCCARTHY J.; O. CANZIANI; N. LEARY; D. DOKKEN; and K. WHITE (Eds), 2001. Impacts, Adaptation, and Vulnerability. Intergovernmental panel on climate change Cambridge University Press. Cambridge. Pp 42, 60.

MORTON, T. 2011. The future that may (or may not) come how farming changes responses to uncertainty in Climate Change Communication; Global Environmental Change, 21 (1), Pp 103, 109.

NATIONAL STATISTICS COORDINATION BOARD-CAR. 2005. Facts and figures: Province of Benguet. Retrieved September 12, 2012 from www.nscb.gov.ph/ rucar/fnf_benguet.htm.

NGALES, M. 2001. International geographic biosphere program. The Economic of Climate Change in Southeast Asia. A Regional Review. Report 41, 51.

PERES, R. Vulnerability and Adaptation Assessment. 2009. Retrieved September 08, 2012 from business mirror. Com.ph on climate change.

RINCON, M.F.G and VIRTUCIO, F.K. Jr. 2008. Climate Change in the Philippines: A Contribution to the Country Environment Analysis. Retrieved October 16, 2012. http//www.climate change.com.

REGIONAL SOCIAL & ECONOMIC TRENDS. 2002. National Statistical Coordination Board, CAR, Baguio City. Retrieved October 16, 2012 from http//www. car. ph. com.

TEBTEBBA FOUNDATION. 2008. Guide of Climate Change and Indigenous Peoples. Tebtebba Foundation, Philippines. Pp 56, 60.

VOGEL, T. 1997. Climate Change and Health. Commission on Climate Change and Development. Pp 70, 75.

WEBER, E. 2010. What shapes perceptions of Climate Change. Wire's Climate Change I Pp 332-342.