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Public Knowledge, Concern and Engagement of Climate Change in Cambodia-A Perspective of Residents in Phnom Penh

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Abstract
This paper explored the public knowledge, concern and engagement (KCE) of climate change (CC) in Cambodia. The study used a survey questionnaire to collect the data from public respondents through online and face-to-face distribution. There were 468 respondents fully completed the questionnaire in which 196 were completed via online and 272 filled in paper-based questionnaire. The collected data were analyzed by using SPSS and the structural topic modeling (STM) was used. The result indicated that the participants had high knowledge about CC; they believed human activities are the main cause of the CC. Almost 60% revealed that CC brings both positive and negative effects to the earth. More interestingly, the major concerns of respondents were the excessive temperature and the change of rainfall pattern. In addition, the participants believed the government plays the leading role in response to CC in Cambodia. More than 40% agreed that fiscal and taxation policies can perform a positive role in dealing with CC. Last, but not least, almost 60% thought personal behavior is important to respond to CC and nearly 64% of respondents is willing to make their contribution to cope with CC. Further analysis showed that only gender, education level and occupation of respondents were significantly associated with their knowledge about CC. Thus, these factors affect the degree of participants' understanding about CC.
Keywords: Knowledge, Concern, Engagement, Climate Change, Cambodia

1. Introduction

Climate change, which is becoming a concern to all countries around the world, especially for vulnerable regions or countries that are located close to the oceans, is being considered to have essential impacts on residents' likelihoods and socio-ecosystems of those countries as well as resulted globally Sun and Han (2018); Thomas and Benjamin (2018). Moreover, the climate change risks (CCR) consist of three basic components such as sensitivity, exposure, and possibility; the major features of CCR include uncertainty, future events, damages, and relativity (Shao-Hong et al., 2012). In the Fifth Assessment Report, IPCC (2013) demonstrated that managing the risks of extreme events and disasters to advance climate change adaptation is a significant basis for information on changing weather and climate extremes. Climate change risk perception analyses revealed significant differences between residents of the four sites in Australia and the result indicated that a perceived lack of climate change knowledge and a mistrust of government communications across all sites (Boon, 2016). The survey demonstrated that climate change is generally perceived as a risk and a threat by the mining industry and to the future operations respectively (Ford et al., 2010). As like, the increasing of natural hazards impacts around the globe is noticeable, especially climate change and extreme weather (McBean, 2004); similarly, the impacts of extreme weather events were definitely more acute and traumatic in nature, leading to injuries and deaths as well as debilitating and fatal communicable diseases (Hashim and Hashim, 2016). Thus, it is necessary for Cambodia to mobilize the public and establish relevant policies and strategies to respond to climate change actively.

The perception of CC is fundamental for planning related policies to cope with CC issues; meanwhile, it will be possible to integrate CC into policy planning, projects, and daily activities and reinforce the whole society to participate in the entire process to mitigate CC due to the only be aware of the existence, causes, and impact of climate change (Yu, Wang, Zhang, Wang, & Wei, 2013). Furthermore, the research on how public perceptions of CC encourage the public to take individual action to respond to climate change is the great essential for the government to implement the policies of climate change effectively and efficiency. Therefore, this paper aims to explore and analyze the public perception of climate change risk in Cambodia in term of their knowledge of CC, the concern of CC, attitudes to government's policies and personal contributions to cope with climate change.

Many great research articles about public perceptions, opinions, and attitudes climate change risk were conducted including Patt and Schröter (2008); Ford et al. (2010); Yu et al. (2013) Chou (2013); Boon (2016); Mase, Gramig, and Prokopy (2017); Frondel, Simora, and Sommer (2017); Chiang (2018); Sun and Han (2018); and Thomas and Benjamin (2018). Chiang (2018) explored community risk perceptions of CC focusing on a flood-prone urban area of Taiwan by using the Driver-Pressure-State-Impact-Response (DPSIR) cause-effect model as the information flow framework. Based on a survey of the Canadian mining sector, Ford et al. (2010) analyzed how climate change is perceived, experienced, and responded in term of nine key indicators. Using a generalized ordered logit approach and drawing on a unique data set originating from two surveys conducted in

2012 and 2014, Frondel et al. (2017) analyzed the determinants of individual risk perception related to three types of natural hazards include heat waves, storms, and floods among more than 6000 German households. Through a 2012 survey of nearly 5000 corn farmers across 22 Midwestern U.S. Watersheds, Mase et al. (2017) highlighted that the farmers were most concerned with longer dry periods and drought, followed by increased heat stress on crops. Patt and Schröter (2008) found that the need for active dialog across stakeholder groups, as a necessary condition for formulating policies that can then be successfully implemented. Sun and Han (2018) investigated the correlation between the individual and societal factors by using the 2013 Taiwan Social Change Survey (TSGS) data with the sample size of 2001; the results demonstrated that climate-related risk awareness was positively associated with not only global severity but also the personal threat. Further results indicated that higher education respondents were more concerned about global severity that personal threat while political party supporters had higher risk perceptions of CC than people who had no party affiliation (Sun & Han, 2018). Based on the survey over 500 Bahamian residents, Thomas and Benjamin (2018) revealed that there were highly interested and receptive to risk communication on CC as well as actions to implement climate change policies. According to the literature above, we come to the conclusion that most of the studies are about public perceptions or attitude toward climate change risk and some other factors such as respondents' background and socio-demographics.

In addition, some studies draw a comparison between different perception's objects about climate change risk or the same objects' concern with climate change risk at different times. van der Linden (2015) tested empirically on a national sample (N=808) of the UK population by combining and integrating cognitive, experiential, and socio-cultural factors about climate change risk. Amamou et al. (2018) highlighted the diversity of farming systems in Tunisia and provided insights about how the farmers perceived CCR and adaptation strategies. Pardo Martínez, Alfonso Piña, and Moreno (2018) discussed the current knowledge and opinions of the urban population in a city of Colombia; the results showed that respondents have heard about CC and the main effects of CC were droughts and floods. Mase et al. (2017) investigated the most common weather and climate risk management and highlighted the critical role of risk perceptions in adaptation attitudes as well as the behaviors among agriculturalists.

2. Methodology

2.1 Research Framework

Drawing from the broad conceptual frameworks discussed earlier, the following framework was developed for this research article about CC in Cambodia. The framework acknowledges the three components include knowledge of CC, the concern of CC and engagement in CC as shown in 错误!未找到引用源。. In addition, the framework also emphasizes the exposure to mass media about climate change.

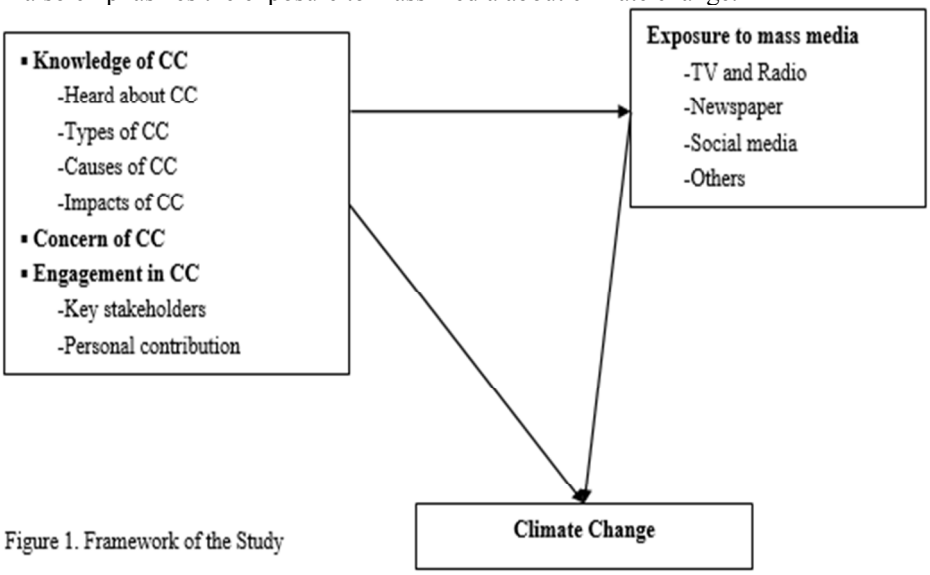

Figure 1. Framework of the Study

2.2 Data Collection

The self-administered questionnaire is divided into four parts including personal information of respondents, knowledge of participants about climate change, concern about climate change and public engagement toward climate change in Cambodia. In order to reach required sample size, the well-designed questionnaire was delivered directly to target respondents and shared via the online medium such as E-mail, Facebook, Telegram, Wechat and other significant social networks. To manage data collected from the online questionnaire, the

Google Drive was applicable and usable to generate datasets from respondents. In addition, data getting from the direct questionnaire (hard copy) were input to SPSS software and combining with online data.

Technically, in order to generate accurate information and results, the Statistical Package for Social Science (SPSS) software version 22.0 was used to analyze the collected data. Descriptive statistics were used to illustrate respondents' demographic characteristics and percentages of categorical variables. Chi-square or Fisher's exact tests (expected cell frequencies less than or equal to five) were used to test the relationships between demographic variables and perception variables. Where responses were ordinal, multivariate ordinal logistic regression analysis was used to explore the association between demographic variables, and odds ratios (OR) with 95% confidence intervals (CI) were calculated.

2.3 Sample Size

Due to it was not possible to study an entire population of Phnom Penh, but the population was known, a sample was taken using a purposive sampling technique. To determine the sample size of the study, Slovin's formula was used; similar to the studies conducted by previous scholars such as Minarti and Segoro (2014); Widyaningsih et al. (2015); Pratiwi (2016); Kagoyire and Shukla (2016); Tina et al. (2016); Boesono et al. (2016) and Mahmoud and Mohamed (2017). In order to apply the Slovin's formula, 95% confidence level and 0.05 error tolerance were determined.

Slovin's formula: $n = \frac{N}{1 + Ne^2}$

Where: n: Number of Sample
N: Total Population
e: Error tolerance

According to PPCH (2017), the total population of Phnom Penh Capital City was 1,501,725 people, thus the number of sample (n) was demonstrated as following:

$$n = \frac{1501725}{1 + 1501725 * 0.05^2} = 400$$

Based on the calculation, the required sample size in the survey was 400 respondents.

3. Results and Discussions

3.1 Characteristics of Respondents

Table 1. Social profile of the respondents

Demographic variables (n=468)		N		
		M	F	Total (%)
Gender	M (male)	248		248 (53.0)
	F (female)		220	220 (47.0)
Age (years old)	<20	48	75	123 (26.3)
	20-30	142	142	284 (60.7)
	31-40	51	1	52 (11.1)
	>40	7	2	9 (1.9)
Education	No formal education	1	1	2 (0.4)
	High school or below	21	13	34 (7.3)
	Undergraduate	161	186	347 (74.1)
	Postgraduate or above	65	20	85 (18.2)
Marital Status	Single	186	200	386 (82.5)
	Married	61	20	81 (17.3)
	Divorced/windowed	1	0	1 (0.2)
Occupation	Student	113	166	279 (59.6)
	Employee	59	34	93 (19.9)
	Housewife	0	2	2 (0.4)
	Business owner	9	2	11 (2.4)
	Government officer	61	16	77 (16.5)
	Others	6	0	6 (1.3)
Income level (US$/month)	No income	74	117	191 (40.8)
	≤500	119	94	213 (45.5)
	501-800	31	4	35 (7.5)
	801-1000	10	1	11 (2.4)
	>1000	14	4	18 (3.8)
Durations of Living in Phnom Penh	Since I was born	44	51	95 (20.3)
	<5	99	139	238 (50.9)
	5-10	20	9	29 (6.2)
	11-20	22	8	30 (6.4)
	>20	63	13	76 (16.2)
Family's Members	1-3	58	52	110 (23.5)
	4-5	106	92	198 (42.3)
	>6	84	76	160 (34.2)

Note: F=female, M=male, N=number.

A total of 215 online samples were collected, but only 196 respondents fully completed the questionnaire for a response rate of 91.2%. 279 samples were collected from face-to-face delivered; however, only 272 respondents had entirely filed in all questions, for a response rate of 97.5%. The lower rate of completion for the online survey was due to poor internet accessibility in Cambodia according to some respondents. This was not considered as a problem because the same questionnaire was used for both surveys. Moreover, not only face-to-face but also online survey respondents were asked for their current residence and agreement before the questionnaire was sent or delivered to fill in in order to reduce the bias of the data and to prevent the research confidentiality ethically. There were a total of 468 completed samples for a response rate of 94.7% as shown in Table 1. A value of Cronbach's alpha of overall reliability and validity of the study was 0.681.

3.2 Respondents' Knowledge about Climate Change

Table 2. Respondents' knowledge about climate change

Items (n=468)		Frequency (%)
Have you ever heard of climate change before?	Yes	449 (95.9)
	No	19 (4.1)
What is the main source of your information on climate change?	TV and Radio	358 (76.5)
	Newspaper	124 (26.5)
	Social Media	318 (67.9)
	Teacher or School	118 (25.2)
	Books & Journals	65 (13.9)
	Workshop	69 (14.7)
	Acquaintances & friends	75 (16.0)
	Others	42 (9.0)
What is the main type of change in climate?	Excessive Temperature	384 (82.1)
	Excessive Cold	180 (38.5)
	Change of rainfall pattern	287 (61.3)
	Frequent cyclone or tidal wave	75 (16.0)
	Frequent flood/drought	233 (49.8)
	Water logging	12 (2.6)
I think human activities are the main causes of climate change.	Strongly Disagree	49 (10.5)
	Disagree	16 (3.4)
	Neutral	35 (7.5)
	Agree	287 (61.3)
	Strongly Agree	79 (16.9)
I think natural factors are the main causes of climate change.	Strongly Disagree	67 (14.3)
	Disagree	101 (21.6)
	Neutral	114 (24.4)
	Agree	168 (35.9)
	Strongly Agree	18 (3.8)
Has climate change happened in your local region?	Yes	412 (88.0)
	No	18 (3.8)
	Uncertainty	36 (7.7)
What kind of impacts climate change will bring to us?	None	21 (4.5)
	Positive effects	32 (6.8)
	Negative effects	139 (29.7)
	Both positive and negative	272 (58.6)

Note: (N=468) Percentage total may add up to more than 100% as multiple responses were permissible.

Table 2 indicated the responses of the participants on their knowledge about climate change. The majority (n=468) of the survey respondents (95.9%) had heard about CC before and only 4.1% had never heard about CC at all. More interestingly, the Table 2 also showed that the main sources of information about CC were from television and radio with appropriate 76.5% accompanied by social media which around 67.9%. Whereas information getting from newspaper and teacher or school were 26.5% and 25.2% respectively, the other sources showed in lower rates. Further results of Table 2 illustrated that the main types of change in climate were excessive temperature (82.1%), change of rainfall pattern (61.3%), frequent flood/drought (49.8%), excessive cold (38.5%), frequent cyclone or tidal wave (16.0%), and waterlogging (2.6%). Moreover, the results found that 61.3% of respondents agreed human activities are the main cause of CC while only 35.9% said natural factors are the main cause of climate change. On the other hand, among the whole respondents, 88.0% answered that CC has happened in their local region as well as the response rate of 58.6% agreed that CC brings both positive and negative impacts to the earth. Among those, 29.7% of the respondents revealed that CC brings negative effects only while there was just 6.8% thought it causes positive effects.

3.3 Respondents' Concern about Climate Change

Table 3. Respondent's concern about climate change

Items (n=468)		Frequency (%)
What is your overall perception about diseases due to climate change in Cambodia?	Increased	400 (85.5)
	Decreased	29 (6.2)
	No change	32 (6.8)
What is the present frequency of diseases during summer compared to five to ten years earlier?	Very low	10 (2.1)
	Low	54 (11.5)
	Normal	109 (23.3)
	High	258 (55.1)
	Very high	30 (6.4)
What is the present frequency of diseases during winter in comparison to five to ten years ago?	Very low	11 (2.4)
	Low	57 (12.2)
	Normal	162 (34.6)
	High	220 (47.0)
	Very high	12 (2.6)
What is the present frequency of diseases during rainy season in comparison to five to ten years ago?	Very low	9 (1.9)
	Low	49 (10.5)
	Normal	175 (37.4)
	High	208 (44.4)
	Very high	22 (4.7)

Table 3 showed the survey respondents' overall perceptions of the frequency of climate variability-induced diseases and health problems in their areas. Among the respondents, 85.5% thought that diseases due to climate change in Cambodia were increased while appropriately around 6.2% thought there was decreased and 6.8% said there was no change. Further results revealed that 55.1% there was a high frequency of diseases during summer compared to five to ten years earlier; however, 23.3% thought that it was normal. There were 47.0% and 34.6% respectively high and normal perceived diseases during winter in comparison to five to ten years ago whereas 44.4% and 37.4% responded respectively that high and normal frequency about diseases during the rainy season.

3.4 Respondents' Engagement towards Climate Change

Table 4. Respondents' engagement towards climate change

Variable (n=468)		Frequency	Percentage (%)
Do you think who plays a leading role in response to climate change in Cambodia?	International Organization	123	26.3
	Government	300	64.1
	Industry/company	169	36.1
	Individuals &family	227	48.5
	Environmental protection department	267	57.1
	Others	49	10.5
The government can take active measures responding to climate change	Strongly disagree	9	1.9
	Disagree	19	4.1
	Neutral	57	12.2
	Agree	299	63.9
	Strongly agree	78	16.7
Fiscal and taxation policies can play a positive role in dealing with climate change	Strongly disagree	32	6.8
	Disagree	102	21.8
	Neutral	115	24.6
	Agree	190	40.6
	Strongly agree	19	4.1
I satisfied with the government and emergency relief organizations' response to CC's impacts	Strongly disagree	16	3.4
	Disagree	40	8.5
	Neutral	98	20.9
	Agree	243	51.9
	Strongly agree	63	13.5
Personal behavior is important to respond to climate change	Strongly disagree	14	3
	Disagree	34	7.3
	Neutral	83	17.7
	Agree	277	59.2
	Strongly agree	53	11.3
I can make contribution to cope with climate change	Strongly disagree	6	1.3
	Disagree	10	2.1
	Neutral	41	8.8
	Agree	298	63.7
	Strongly agree	106	22.6

As shown in Table 4, 64.1% responded that government plays a leading role in response to climate change in Cambodia while 57.1% and 48.5% respectively thought environmental protection department as well as individuals and families. Furthermore, there were 36.1% for industry and company whereas 26.3% for international organizations in playing a role in responding to climate change in Cambodia. As further results shown in the table, 63.9% had agreed that the government can take active measures responding to climate change accompanied by 16.7% strongly agreed with this statement. Moreover, among the respondents, 40.6% agreed that fiscal and taxation policies can play a positive role in dealing with climate change while 51.9% satisfied with the government and emergency relief organizations' response to CC's impacts. Along with this result, 59.2% agreed that personal behaviour is important to respond to climate change and 63.7% agreed willing to make the contribution to cope with climate change.

3.5 Socio-Demographic Variables and Knowledge of Climate Change

Table 5. Association between socio-demographic variables and knowledge of climate change

Variables		Knowledge of climate change			Statistics
		No (%)	Yes (%)	Total (%)	
Gender	M (male)	4 (1.6)	244 (98.4)	248 (100.0)	*X2 =8.11*
	F (female)	15 (6.8)	205 (93.2)	220 (100.0)	*df =1*
	Total	19 (4.1)	449 (95.9)	468 (100.0)	*p =0.004*
Age (years old)	<20	5 (4.1)	118 (95.9)	123 (100.0)	
	20-30	13 (4.6)	271 (95.4)	284 (100.0)	*X2 =1.186*
	31-40	1 (1.9)	51 (98.1)	52 (100.0)	*df =3*
	>40	0 (0.0)	9 (100.0)	9 (100.0)	*p =0.756*
	Total	19 (4.1)	449 (95.9)	468 (100.0)	
Education	No formal education	1 (50.0)	1 (50.0)	2 (100.0)	*X2 =14.718*
	High school or below	0 (0.0)	34 (100.0)	34 (100.0)	*df =3*
	Undergraduate	17 (4.9)	330 (95.1)	347 (100.0)	*p =0.002*
	Postgraduate or above	1 (1.2)	84 (98.9)	85 (100.0)	
	Total	19 (4.1)	449 (95.9)	468 (100.0)	*X2 =4.207*
Marital Status	Single	19 (4.9)	367 (95.1)	386 (100.0)	*df =2*
	Married	0 (0.0)	81 (100.0)	81 (100.0)	*p =0.122*
	Divorced/windowed	0 (0.0)	1 (100.0)	1 (100.0)	
	Total	19 (4.1)	449 (95.9)	468 (100.0)	
Occupation	Student	8 (2.9)	271 (97.1)	279 (100.0)	*X2 =16.026*
	Employee	10 (10.8)	83 (89.2)	93 (100.0)	*df =5*
	Housewife	0 (0.0)	2 (100.0)	2 (100.0)	*p =0.007*
	Business owner	1 (9.1)	10 (90.9)	11 (100.0)	
	Government officer	0 (0.0)	77 (100.0)	77 (100.0)	
	Others	0 (0.0)	6 (100.0)	6 (100.0)	
	Total	19 (4.1)	449 (95.9)	468 (100.0)	
Income level (US$/month)	No income	8 (4.2)	183 (95.8)	191 (100.0)	*X2 =3.38*
	≤500	11 (5.2)	202 (94.8)	213 (100.0)	*df =4*
	501-800	0 (0.0)	35 (100.0)	35 (100.0)	*p =0.496*
	801-1000	0 (0.0)	11 (100.0)	11 (100.0)	
	>1000	0 (0.0)	18 (100.0)	18 (100.0)	
	Total	19 (4.1)	449 (95.9)	468 (100.0)	
Durations of Living in Phnom Penh	Since I was born	9 (9.5)	86 (90.5)	95 (100.0)	*X2 =12.53*
	<5	8 (3.4)	230 (96.6)	238 (100.0)	*df =4*
	5-10	2 (6.9)	27 (93.1)	29 (100.0)	*p =0.014*
	11-20	0 (0.0)	30 (100.0)	30 (100.0)	
	>20	0 (0.0)	76 (100.0)	76 (100.0)	
	Total	19 (4.1)	449 (95.9)	468 (100.0)	

The result in Table 5 indicated that only gender, education, and occupation of respondents were significantly associated with their knowledge whereas age, marital status, income level and the duration of living in Phnom Penh revealed no significantly associated with knowledge of CC. Further results showed that 98.4% of male said they had heard about climate change and 93.2% of female respondents answered yes for their knowledge about CC. In contrast, less of both male and female replied "No" for this question, thus it illustrated the gender variable was significant to the level of knowledge about CC. Similarly, the level of education of participants also revealed significantly to knowledge of CC such as high educational level included high school or below, graduate, and post-graduate or above demonstrated their per cent 100%, 95.1%, and 98.9% respectively. In addition, different kinds of occupation showed the varied level of understanding about CC as well as its impact on human health.

3.6 Discussions

This study is purposed to assess the knowledge and perceptions of the residents living in Phnom Penh, Cambodia about climate change and its impact on health. The findings provide important insights into what people think

and believe from their experience and their background knowledge. The study indicated that the majority (95.9%) of respondents were aware of climate change. This high level shows the engaging of Cambodian people in addressing climate change and perhaps even broader environmental issues in relation to public health. This high awareness level was similar to those reported by Pandve et al. (2011), Toan, Kien, Giang, Minh, and Wright (2014), Wei et al. (2014) and Al Buloshi and Ramadan (2015). However, some other research studies found differently that most respondents had a low or fair level of knowledge about CC; those included the studies done by Twum Barimah, Osei Kwadwo, and David (2015) and Sulistyawati, Mulasari, and Sukesi (2018).

Regarding the types of CC, the respondents mentioned that the main types of change in climate are the excessive temperature and the change in rainfall pattern; consequently, these two issues are the current concern of Cambodian people. These findings are similar to the results from the previous studies such as Kabir et al. (2016) and Twum Barimah et al. (2015). With regard to causes or reasons for CC, most people mentioned that human activities are the main causes to destroy the climate nowadays as the result of this study showed almost more than 60 per cent agreed with this statement. This result is supported by the findings carried out by Ojomo, Elliott, Amjad, and Bartram (2015) and Knight (2016). Mostly, the sources of information about climate change are from TV and radio as well as social media; a similar finding conducted by Nigatu, Asamoah, and Kloos (2014).

More interestingly, even though people response that climate change brings both negative and positive impact on earth; most of them also strongly agree the higher negative effects of CC rather the positive one. This result is similar to the findings by Haque, Yamamoto, Malik, and Sauerborn (2012) and Wei et al. (2014). Accordingly, most residents believe the infectious diseases due to CC are increasing in comparison to five or ten years ago; this illustrated that CC brings extremely high diseases to earth, especially human being. As like, Haque et al. (2012) have found the increase in climate variability sensitive diseases and human health issues.

In addition, the majority of respondents believed that government and environmental protection department play leading roles in dealing with climate change. These parties are involving set up mitigation policies and adaptation strategies as well as ensure the effective implementation of those policies. This result is similar to the study carried out by Yu, Wang, Zhang, Wang, and Wei (2013), the results of the survey questionnaire in China. Regarding the policies on CC, most of the respondents believed fiscal and taxation policies can play a crucial role in dealing with the prevention of increasing climate change. Moreover, participants satisfied with the government emergency relief organizations' response to CC; meanwhile, the implementation of CC strategic plan is effective and supported by the stakeholders. A study conducted by Yu et al. (2013) illustrated that the participants also believed in government policies in response to CC and the effective policy measures were fiscal and taxation policies as well.

With regard to the association between socio-demographic and knowledge of CC, gender, level of education and occupation of respondents were significantly associated with their knowledge whereas age, marital status, income level and the duration of living in Phnom Penh revealed no significantly associated with knowledge of CC. With higher levels of education and different types of occupation, individuals would have higher perceptions of climate change. Similarly, another study carried out by Kabir et al. (2016) found the level of education was a strong predictor of knowledge of CC in Bangladesh, thus higher levels of education were more likely to be aware of CC than those with lower education levels. Another study conducted by Combest-Friedman, Christie, and Miles (2012) also reported that CC awareness most strongly depended on the respondent's level of education.

4. Conclusions

This study investigated the public perceptions about the impacts of climate change by the residents of Phnom Penh through an online survey and face-to-face via a self-administered questionnaire. The causes of climate change, impacts of climate change, climate change and diseases and climate change policies were combined as the core constructs. The association between socio-demographic variables and knowledge of climate change was empirically analyzed using SPSS 24.0 software. The results highlighted a comprehensive understanding of Cambodian people about the current state of CC as well as the results brought out some hidden issues behind the present condition of CC for authorities and policymakers to reconsider. The results also showed the strongest indicators that were significantly associated with knowledge of climate change.

The results of this study reveal that a significant number of respondents in Phnom Penh was aware of climate change and its health impacts; they were also aware that the main cause of climate change was human activities. The study, additionally, shows that many more residents had gained information on climate change related to health impacts from television, radio and social media. The excessive temperature, the change of rainfall pattern and the frequent flood or drought were the major concern of most people living in Cambodia. More interestingly, people thought climate change brings not only negative impacts but also positive effects on earth. However, some of them strongly believed that higher negative impacts of climate change on human health were brought rather than the positive one.

On the other hand, the findings extended indicating that people in Cambodia have a widespread awareness of climate change and diseases. They believed diseases due to CC were high compared to five or ten years earlier even in summer, winter or rainy seasons. The present frequency shows that the infectious diseases are increasing, hence efforts are needed to mitigate and adapt climate change in the context of the proposed policies, which combine global environmental protection and local sustainable development.

Based on further data analysis, this study has shown that government, environmental protection department, individuals and families play important role in shaping the impacts of climate change on human health in Cambodia. Moreover, strengthening the fiscal and taxation policies is the potential way to reduce the destruction of climate change whereas the personal behavior also plays an important role in dealing with CC issues. Even though, Cambodian people are willing to make their contribution to cope with climate change by following the governmental policies and climate change action plan.

On the one hand, gender, education and occupation of respondents were significantly associated with their knowledge whereas age, marital status, income level and the duration of living in Phnom Penh revealed no significantly associated with knowledge of climate change. With higher levels of education and different types of occupation, individuals would have higher perceptions of climate change.

References

BOESONO, H., SETIAWAN, D. R., PRIHANTOKO, K. E., JAYANTO, B. B. & MALALA, A. R. 2016. Productivity Analysis of Mini Purse Seine in PPI Pulolampes Brebes, Central Java, Indonesia. *Aquatic Procedia,* 7**,** 112-117.

BOON, H. J. 2016. Perceptions of climate change risk in four disaster-impacted rural Australian towns. *Regional Environmental Change,* 16**,** 137-149.

FORD, J. D., PEARCE, T., PRNO, J., DUERDEN, F., BERRANG FORD, L., BEAUMIER, M. & SMITH, T. 2010. Perceptions of climate change risks in primary resource use industries: a survey of the Canadian mining sector. *Regional Environmental Change,* 10**,** 65-81.

HASHIM, J. H. & HASHIM, Z. 2016. Climate Change, Extreme Weather Events, and Human Health Implications in the Asia Pacific Region. *Asia Pacific Journal of Public Health,* 28**,** 8S-14S.

IPCC 2013. Climate Change 2013: the fifth assessment report of the intergovernmental panel on climate change. Cambridge University Press, Cambridge, United Kingdom and New York.

KAGOYIRE, A. & SHUKLA, J. 2016. Effect of Credit Management on Performance of Commercial Banks in Rwanda (A Case Study of Equity Bank Rwanda Ltd). *International Journal of Business and Management Review,* 4**,** 1-12.

MAHMOUD, A. S. & MOHAMED, H. A. 2017. Critical Thinking Disposition among Nurses Working in Puplic Hospitals at Port-Said Governorate. *International Journal of Nursing Sciences,* 4**,** 128-134.

MCBEAN, G. 2004. Climate Change and Extreme Weather: A Basis for Action. *Natural Hazards,* 31**,** 177-190.

MINARTI, S. N. & SEGORO, W. 2014. The Influence of Customer Satisfaction, Switching Cost and Trusts in a Brand on Customer Loyalty–The Survey on Student as im3 Users in Depok, Indonesia. *Procedia-Social and Behavioral Sciences,* 143**,** 1015-1019.

PPCH 2017. Phnom Penh Capital Hall (PPCH).

PRATIWI, S. R. 2016. Green Line Strategy in Mitigating Climate Change: Case Study in Tarakan City, North Kalimantan. *Procedia-Social and Behavioral Sciences,* 227**,** 430-434.

SHAO-HONG, W., TAO, P. & SHAN-FENG, H. 2012. Climate Change Risk Research: A Case Study on Flood Disaster Risk in China. *Advances in Climate Change Research,* 3**,** 92-98.

SUN, Y. & HAN, Z. 2018. Climate Change Risk Perception in Taiwan: Correlation with Individual and Societal Factors. *International Journal of Environmental Research and Public Health,* 15**,** 91.

THOMAS, A. & BENJAMIN, L. 2018. Perceptions of climate change risk in The Bahamas. *Journal of Environmental Studies and Sciences,* 8**,** 63-72.

TINA, C., OJUNTA, L. & AGBENIGA, F. I. 2016. Training and Development: Pre-requisite for Employee's Efficiency for National Growth and Sustainability. *International Journal of Management Sciences and Business Research,* 5.

WIDYANINGSIH, N., TJIPTOHERIJANTO, P., WIDANARKO, S. & SEDA, F. S. 2015. Linkage Model Between Sustainable Consumption and Household Waste Management. *Procedia Environmental Sciences,* 28**,** 195-203.