

Perception of climate change and adaptation in rural area in Thailand

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Abstract— This research was conducted to clarify to 1) understand local people's perception of climate change and adaptation, and 2) figure out climate information collection and sharing in vulnerable rural area in Thailand. Data were collected using semi-structured interview and questionnaire survey from a total sample of 297 households in Songkhla province. As a result, it was found that natural disaster which link to life directly such as storm, high tide, stream erosion, typhoon, land slide, flash flood is considered to become more serious in future. 95.6% of respondents they perceived local climate change, and 79.6% of respondents answered that their life styles were affected by climate change. Nevertheless, 53.6% of respondents answered that "I do not have willingness to adapt to climate change" and "I cannot decide whether I will take adaptation measures or not" from a long-term perspective. The proportion of respondents who perceive that their lifestyles have been changed by climate change or natural disaster is high. However, even if the frequency of natural disaster increase, those who have willingness to do adaptation is less than half of respondents. Moreover, it is recommended that to make climate information spread from various sources. Especially local government is considered to have higher reliability. It is also to be noted that "local wisdom" namely their own experiences such as observation changes of cloud, moon, sky and ocean also has high reliability. It is worthwhile to dispatch adaptation information incorporating local wisdom. In addition, to construct system to share the information among the community residents is effective.

Keywords— Perception of climate change, adaptation to climate change, climate information collection

I. INTRODUCTION

Rural area is dependent on natural resources that are prone to be affected by climate changes, especially serious effect on those who live in vulnerability areas. Local adaptation strategies are necessary to mitigate the impact of climate change. Thailand ranked number 10 of 180 nations most

affected in the period from 1996 to 2015 (annual average) by "The Long-Term Climate Risk Index (CRI)" [1]. Thailand is vulnerable to extreme weather events such as tropical storms, floods and drought. For tackling these issues, Thai government formulated "Climate Change Master Plan 2015-2050" in 2015. The vision is to achieve climate resilience and low carbon growth in accordance with sustainable development agenda. This master plan has 3 key approaches such as adaptation, mitigation and capacity building. "Thailand's National Adaptation Plan" has been projected and the implementation process will be started from 2018 to 2021. They concerning information on gaps and needs of local level is necessary, however limited [2].

In previous research on people's perception of climate change in Thailand, Manandhara, Pratoomchaia, Ono, Kazama and Komori found that nearly 45% of households have personally perceived climate change. More than 70% of households have perceived droughts and floods impacts on their livelihoods but have not completely understood their causes [3]. Pratoomchai, Kazama, Manandhar, Ekkawatpanit, Saphaokham, Komori and Thongduang clarified that examining the people's perception of different generations, people who are ≥ 41 years old shared almost the same people's perception, and the people who are ≤ 40 years old showed more awareness of climate change impacts. From an optimistic point of view, the younger generation realized potential climate change impacts [4]. According to earlier study by Henry, Kawasaki and Meguro, the most socially vulnerable with low-income, middle school graduate and below, 60 years of age or more face to difficulty to access to information on climate [5]. The coastal vulnerability to erosion considering a disaster leading to land loss in Songkhla province in the Lower Gulf of Thailand was evaluated by Ritphring and Sungngam. The vulnerability level of coastal area of Songkhla province is categorized into very high, high, moderate, low and very low

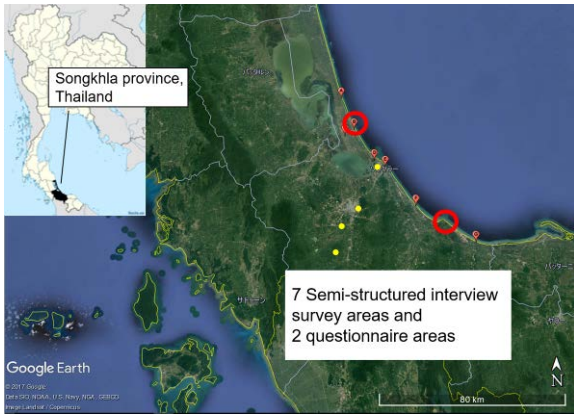


Fig. 1. Location of study area

by coastal characteristic, coastal forcing and socio-economic [6].

As far as we know, there have been few reports about people's perception of climate change and adaptation, information collection and sharing in vulnerability rural area in Thailand. This research aimed to 1) understand local people's perception of climate change and adaptation, and 2) figure out climate information collection and sharing in vulnerability rural area in Thailand.

II. MATERIALS AND METHODS

A. Study area

This study focuses on vulnerable rural area to climate impact. 2 villages in coastal areas where categorized the coastal vulnerability level is high were selected as study areas in Songkhla province. Songkhla province is located southern part of Thailand, occupies an area of 7393 square kilometers with the coastline length about 158 kilometers [7]. The coastal area in Songkhla province are potentially vulnerable to erosional hazard [6]. According to census in 2000, Songkhla has 1,255,700 total population consisting 76.6% of Buddhism and 23.2% of Muslims. The average years of education attainment aged 15 years and over is 7.5 years, and population aged 6-24 years not attending school is 36.5%. The ration of occupations are employers is 2.0%, own account workers is 33.1%, employees is 41.4% and unpaid family workers is 23.4% [8].

B. Data collection

Data were collected using semi-structured interview and face to face questionnaire survey from a total sample of 297 households in Songkhla province. The semi-structured interview was conducted in 7 coastal areas in Songkhla province to extract components of questionnaire about perception, information collection and sharing of climate change and adaptation using previous studies as references (TABLE I.) [5, 9, 10, 11]. The questionnaire was developed based on the semi-structured interview and distributed to 300 households in 2 villages where were categorized coastal vulnerability level is high [6]. The data from questionnaires were collected in 2018. Fig.1. shows location of study area. TABLE I. shows outline of questionnaire survey.

TABLE I. RESEARCH OUTLINE

| Topic | Question | Scale |
|---------------------|---|-------------------|
| Climate change | Perceive of climate change[9, 10] | Multiple - choice |
| | Long-term view on climate change | Multiple - choice |
| Adaptation | Adaptation to climate change | Multiple - choice |
| | Behavioral intention towards adaptation | Single-choice |
| Climate information | Access to climate information | Single-choice |
| | Climate information sources [5] | Multiple - choice |
| | Reliability of information sources | 4 scales |
| | Climate information sharing [11] | Single-choice |
| Personal attribute | Age, gender, occupation, income, educational level, religion, disaster experience | - |

III. RESULT AND DISCUSSION

298 questionnaires were returned with a response rate of 99.0%. The attributes of questionnaire responses are shown in Fig. 2. The attributes of respondents were fifties (29.9%) and forties (24.8%), office worker/organization staff (25.7%), independent business (25.0%), Islam (95.3%) and natives of the study area (78.3%) have higher proportions.

| Topic | Item | Number of responses | Ratio of responses for each item |
|--------------------|-----------------------------------|---------------------|----------------------------------|
| Age | Under 20 years old | 2 | 0.7 |
| | Twenties | 7 | 2.4 |
| | Thirties | 35 | 11.9 |
| | Forties | 73 | 24.8 |
| | Fifties | 88 | 29.9 |
| | Sixties | 61 | 20.7 |
| | Seventies | 22 | 7.5 |
| | Over 80 years old | 6 | 2.0 |
| Gender | Male | 226 | 77.9 |
| | Female | 64 | 22.1 |
| Occupation | Office worker/ organization staff | 76 | 25.7 |
| | Independent business | 74 | 25.0 |
| | Forestry | 47 | 15.9 |
| | Government employee | 31 | 10.5 |
| | NPO/NGO | 29 | 9.8 |
| | Fishery | 21 | 7.1 |
| | Agriculture | 10 | 3.4 |
| | Part time job | 4 | 1.4 |
| | Housewife | 1 | 0.3 |
| | Student | 1 | 0.3 |
| | Middle of job hunting | 1 | 0.3 |
| Without occupation | 1 | 0.3 | |
| Religion | Buddhism | 11 | 3.7 |
| | Islam | 286 | 96.3 |
| Hometown | This village | 235 | 79.9 |
| | Other places | 59 | 20.1 |

Fig. 2. Attribute of the questionnaire responses

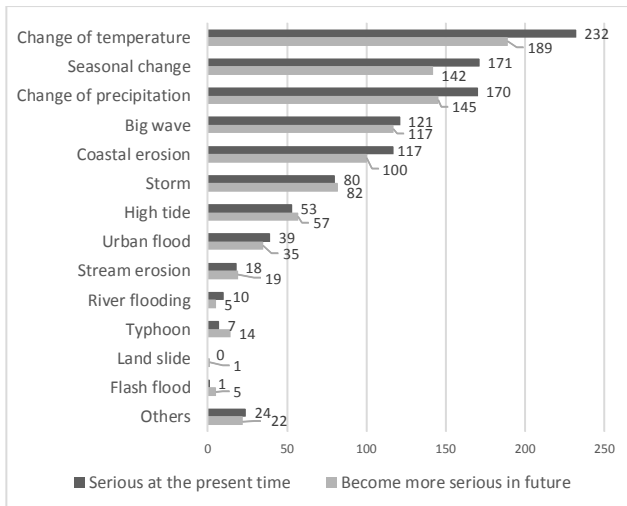


Fig. 3. Perception of climate change (Multiple-answer)^a

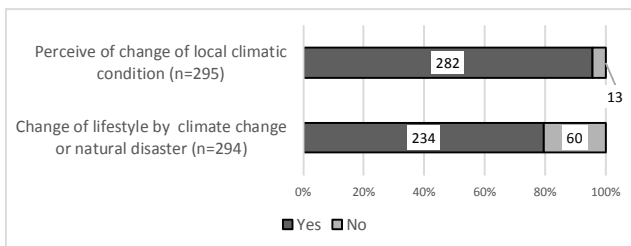


Fig. 4. Perceive of change of local climatic condition and lifestyle^a

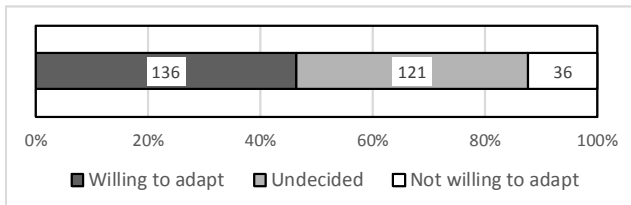


Fig. 5. Perception of adaptation implementation (n=293)^a

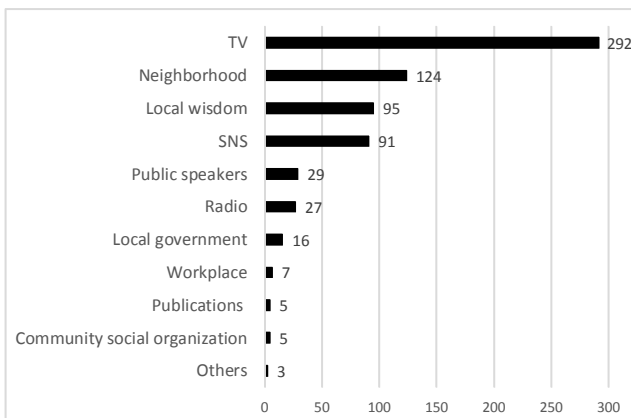


Fig. 6. Sources of climate information (Multiple-answer) (n=292)^a

^a. The numbers in fig. 3.4.5. 6. show the number of respondents.

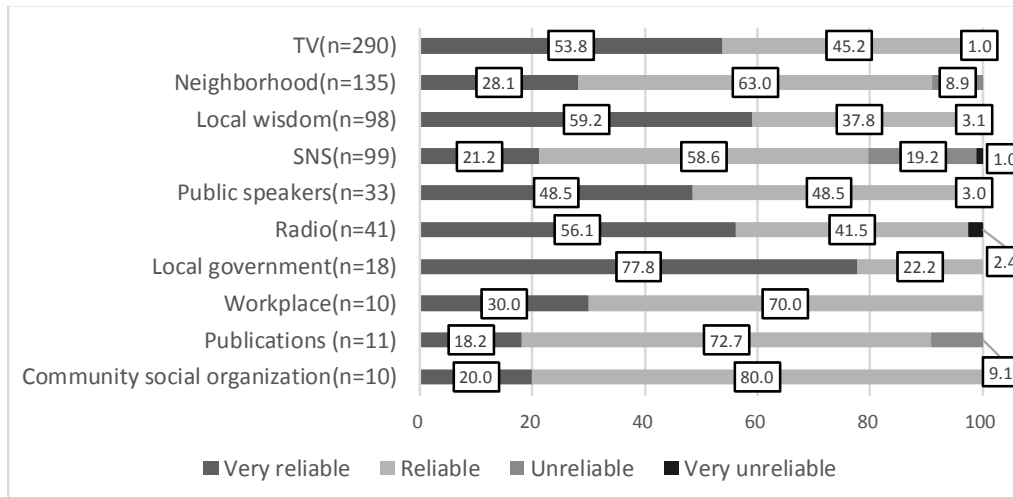
A. Perception of climate change and adaptation

It was found that 81.4% of respondents of questionnaire survey answered that “Change of temperature is serious at the present time”. Next to change of temperature, the percentage of respondents are high in the order of seasonal change (60.0%), change of precipitation (59.6%), big wave (42.5%), coastal erosion (41.1%), storm (28.1%). On the other hand, 65.2% of respondents answered that “Change of temperature will become more serious in future” from a long-term perspective. Next to change of temperature, the percentage of respondents are high in the order of change of precipitation (50.0%), seasonal change (49.0%), big wave (40.3%), coastal erosion (34.5%) and storm (28.3%) (Fig. 3.). Natural disasters which link to life directly such as storm, high tide, stream erosion, typhoon, land slide, flash flood is considered to become more serious in future was found.

Fig. 4. shows perceive of change of local climatic condition in the past decade and change of lifestyle by climate change or natural disaster. It was found that 95.6% of respondents answered that they perceived local climate change, and 79.6% of respondents answered that their life styles were affected by climate change. Nevertheless, as shown in Fig. 5., 53.6% of respondents answered that “I do not have willingness to adapt to climate change” and “I cannot decide whether I will take adaptation measures or not” from a long-term perspective. The proportion of respondents who perceive that lifestyles have been changed by climate change or natural disaster is high. However, even if the frequency of natural disaster increase, those who have willingness to do adaptation is less than half of respondents.

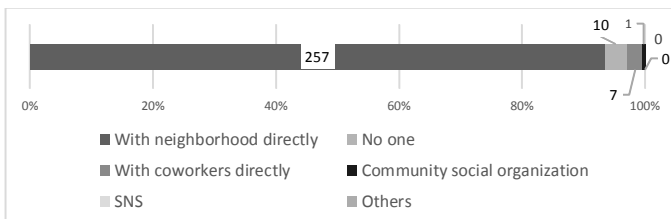
B. Climate information collection and sharing

We found that 99.3% of respondents got climate information from TV. Next to TV, the percentage of respondents are high in the order of neighborhood (46.2%), SNS (Social Network Services) (33.9%), local wisdom namely their own experiences such as observation changes of cloud, moon, sky and ocean (33.6%) (Fig.6.). Regarding reliability of information resources, the highest percentage of “very reliable” information source is local government (77.8%) (n=18). Next to local government, the percentage of respondents are high in the order of local wisdom (59.2%) (n=98), radio (56.1%) (n=41) and TV (53.8%) (n=290) (Fig.7.). Fig.8. reveals information sharing. 93.5% of respondents share the climate information with neighborhood directly. Next to neighborhood, the percentage of respondents are high in the order of “no one” (3.6%), “with coworkers directly” (2.5 %), “community social organization” (0.4%), “SNS” (0%) and “others” (0%). Here it can be seen that it is necessary to spread information from various sources, especially local government and local wisdom have higher reliability.



^b The numbers in the fig. show the ratio of respondents of each information sources.

Fig. 7. Reliability of each information sources^b



^c The numbers in the fig. show the number of respondents.

Fig. 8. Climate information sharing (n=275)^c

IV. CONCLUSION

We can deduce the following: 1) It is shown that natural disasters which link to life directly are considered to become more serious in future was found. The proportion of respondents who perceive their lifestyle have been changed by climate change is high, however, raising awareness of implementation of adaptation to climate change is still necessary. 2) It is recommended that to make climate information spread from various sources, especially local government. It is also to be noted that "local wisdom" also has high reliability. Therefore, it is worthwhile to dispatch adaptation information incorporating local wisdom. Moreover, the system to share information among the community residents is effective.

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