COMMUNICATION STRATEGIES OF NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION VOLUNTEER (NEV) TO DRIVE LOW CARBON COMMUNITY: A CASE STUDY OF BAN TOR PHAE, KHUN YUAM DISTRICT, MAE HONG SON PROVINCE

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ABSTRACT

This research aims to: 1) examine activities initiated by the NEV, including analyze the amount of carbon storage and greenhouse gases reduction; and 2) raise awareness and analyze the communication strategies. Participatory action research was employed together with in-depth interview and focus group discussion. The results found that the NEV initiated activities following the low carbon city strategy: 1) City of Trees, trees planting and forest ordination; 2) City of Waste Minimization, managing waste from its source, waste sorting, making use of waste and plowing agricultural residues; 3) City of Energy Efficiency, having the idea of using solar energy; and 4) City of sustainable consumption, growing vegetables in the household and producing food ingredients to reduce travel outside the community. From the calculation, 20 square meters of community forest could store 10.373 tCO_2e, waste management and sustainable consumption promotion could reduce greenhouse gases by 445.18 $KgCO_2e$. Communication strategies to achieve low carbon community were: 1) creating awareness of the NEV to understand ways to support low carbon community, and clearly communicate benefits to local people for continuous participation; 2) using local language; 3) employing the easily accessible media; and 4) communicating contents that links environmental issues with local health and tourism.

KEYWORDS: 1) COMMUNICATION 2) NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION VOLUNTEER (NEV) 3) GREENHOUSE GASES REDUCTION 4) LOW CARBON COMMUNITY 5) MAE HONG SON

1. Introduction

To mitigate and solve climate change problem, there is a steady stream of relief efforts by reducing greenhouse gases, by adopting the low carbon society principle and awakening in many countries such as the United States, India, China, Japan, and Thailand (Gomi et al., 2010; Su et al., 2013; Sereenonchai et al., 2019). Thailand has been locally driven by promoting and supporting agencies to implement activities that reduce greenhouse gas emissions, such as the "Low Carbon Municipal" project of the Municipal League of Thailand that operates the project. There are four strategies under this project covering City of Trees, City of Waste, City of Energy Efficiency and City of sustainable consumption. In addition, local government organizations have been encouraged to prepare their greenhouse gas accounts using the concept of organizational carbon footprint. Although there were some previous studies regarding greenhouse gas reduction action from various activities, both of the government agencies, local government organizations or the readiness of the community to drive a low carbon city. However, no studies have been conducted on how to drive local environmental volunteer activities that can help support the reduction and sequestration of greenhouse gases, including a lack of cooperative communication practices on scientific knowledge regarding carbon sequestration and greenhouse gas reduction to promote knowledge and behavior at a community level (Sereenonchai et al., 2019).

For these reasons, the study of and activities driving of environmental volunteers that can support a low carbon community is an interesting issue and beneficial practice, especially the role of natural resources and environmental protection volunteers (NEV). NEV as the public volunteer to build public participation in the conservation of natural resources and environmental management according to their own context. Therefore, this research aims to examine activities initiated by the NEV, and inviting local people to participate in and calculate the amount of greenhouse gases, as well as communicating the results of the activities along with scientific data to NEV and stakeholders, including analyze the amount of carbon storage and greenhouse gases reduction, as well as raise awareness and analyze the communication strategies.

2. Literature Review

The driving a low carbon Society at the local level of Thailand

An example of Thailand's low carbon city building efforts is the Thai municipal project aimed at low carbon cities by the League of Thailand Association. The project "Thai municipalities go to a low carbon city in honor of His Majesty 84th Birthday Anniversary", supported by the European Union (EU) budget was initiated to encourage the administrators and the municipalities staff to participate in the project to gain knowledge and understanding of the causes and processes of carbon emissions from various activities, and has the potential to change the direction of development to "Low Carbon Municipality" according to the Sufficiency Economy Royal Initiative. Low carbon cities in the context of this project mean cities that have taken any action to minimize their greenhouse gas emissions under the four strategic frameworks (Kamuang, 2012):

City of Trees: emphasize the city with sustainable green space

City of Waste Minimization: focusing on waste management covering garbage and wastewater, including other types of pollution considering the complete management from its source.

City of Energy Efficiency: actions to promote local people to reduce energy consumption by saving electricity and fuel, including campaigning for alternative energy or renewable energy.

City of Sustainable consumption: actions to promote the adoption of the sufficiency economy principles in making decisions on consumption, including promoting product consumption/services made in or near your home/community to reduce energy consumption and to minimize carbon emissions from production, transportation, post-consumption disposal as little as possible.

3. Research Methodology

This research employs qualitative and quantitative research methods, data was collected in the field research using participatory action research, in-depth interview and focus group discussion, while content analysis was used to analyze the data. Key informants were selected by purposive sampling consisting of: 10 Ban Tor Phae NEV, 30 Ban Tor Phae local people and 4 NEV supporters for environmental protection. There are research steps to answer the objectives as follows:

Objective 1) To examine activities initiated by the NEV, including analyze the amount of carbon storage and greenhouse gases reduction.

1) Assess the knowledge and understanding of the NEV leaders in the issue of climate change, greenhouse gas, low carbon society (low carbon cities / communities), and discuss to the characteristics / patterns of environmental activities initiated and implemented with local people in line with the low carbon urban strategy. How to invite people from your community to join activities, how to communicate during the activity, characteristics of community participation, the results of the activities, what impresses you from the activities, things that you want to develop in the activities , comments and suggestions for actions aimed at low carbon communities, and to promote knowledge and understanding of climate change, greenhouse gas, low carbon society (urban/low carbon community) , and methods for measuring carbon sequestration and greenhouse gas reduction from conservation and tree planting , waste management, energy saving and sustainable consumption. Representatives of the village who were ready and interested in participating in carbon sequestration and greenhouse gas reduction processes.

2) Survey and analyze the activities conducted by the NEV and local people in the area using the low carbon strategy of the Municipal League of Thailand (2012) as a guideline for education and calculating the amount of carbon storage, greenhouse gas reduction from the activities of the NEV and local people, including:

- City of Trees: The study area was Ban Tor Phae community forest with the approximate area of 1,000 rai (1 Rai = 1,600 Square Meters), by placing 10 X 10 meters sample plots and calculating the above-ground biomass using the allometric equation, and evaluated by deciduous dipterocarp forest and mixed deciduous forest.
- City of Waste Minimization: solid waste management in the community by separating the components of municipal solid waste and weighing, calculating the greenhouse gas emissions of municipal solid waste, which was accounted for only the waste to eliminate by other methods instead of landfill, and a carbon footprint assessment in accordance with IPCC 2006 guidelines for conducting waste sorting activities.
- City of Energy and City of sustainable consumption use a carbon footprint assessment according to IPCC 2006 guidelines.

3) In-depth interviews with representatives of internal and external agencies that support the operation of the NEV, including government agencies, private organizations, independent organizations and networks. To about the nature of support for the operation of the NEV, the nature of participation Join the community, the results that arise from the implementation of the activity, what would like to develop in the activity comments and suggestions for actions aimed to low carbon communities.

Objective 2) To raise awareness and analyze communication strategies of the NEV.

4) Assess the knowledge and understanding of the NEV leaders after the issue of climate change and low carbon community were provided, including the calculation of greenhouse gases under the low carbon city strategy.

5) Media planning, designing and producing to communicate information about the calculation of carbon sequestration and greenhouse gas reduction, including basic knowledge about climate change and its impacts on local people, by considering, selecting and designing messages and channels of communication.

6) Communication intervention together with the NEV leaders to enhance the knowledge and understanding of the NEV members and local people (who did not participate in the planning, design and producing the media).

7) Assess the NEV members and local people perception (who did not participate in the planning, design and producing the media process) with small group discussions, by measuring the level of interest and perception, in terms of knowledge, attitudes and trends, or behavioral modifications aimed to low carbon community.

8) Use content analysis to analyze information obtained from group discussions, in-depth interviews, activity data and greenhouse gas assessment, exchanging between communication intervention for enhancing knowledge and understanding, assessing perception and understanding from communication, including analyzing communication strategies aimed to the low carbon community.

4. Results

4. 1 Activities for natural resource and environmental management, and calculations of carbon sequestration and greenhouse gas reduction.

Ban Tor Phae NEV has implemented various natural resource and environmental management activities according to the community context. Observing at the problems arising from their livelihoods and awareness of the lack of natural resources in the community, these have caused less and scarce available resources. Moreover, the scenery of the village was not beautiful because of no systematic waste sorting and waste management. The NEV invited their community members to participate in the activities via local media consisting of local broadcasting tower, village meetings and word of mouth. The community involvement process started from understanding the existing problems, figuring out the solutions, taking action along with providing knowledge from training and study tours with pointing out the benefits to occur. The activities were in line with the strategy of low carbon cities as follows:

1) City of Trees: trees planting in areas that have previously been invaded for agriculture, forest ordination to conserve forest areas from being destroyed, and making a fire line to prevent forest fires, by performing every year and once a year;

2) City of Waste: waste management at the source and campaigning for households to sort waste, make benefits from waste, keep the village clean, the campaign to reduce using plastic bags by using wicker baskets produced from the community or cloth bags, and plowed agricultural waste to reduce open burning;

3) City of Energy Efficiency: having an idea to use renewable energy from solar cells; and

4) City of sustainable consumption: growing vegetables in the household, and use wisdom for food ingredients production to reduce travelling outside the community.

From the sampling experiment to calculate carbon sequestration and greenhouse gas reduction, 20 square meters of community forest could store 10.373 tCO_2e, waste management and sustainable consumption promotion could reduce greenhouse gases by 445.18 $KgCO_2e$.

4. 2 Raising awareness and analyzing communication strategies to drive low carbon community

4.2.1 Raise awareness of climate change and its impact on local people

To raise awareness of local people, a review of the knowledge understanding that has been communicated and jointly analyzed with the NEV leaders should be started covering: climate change, greenhouse gas, carbon storage and greenhouse gas reduction from activities of the NEV and local people together with communication planning and designing. The communication to create awareness among local people are:

- Sender was the NEV leader, who has been trusted and accepted by the local people, to communicate with local people together with the researcher. Local language to communicate the content to be easier to understand was also employed, while the rest of NEV leaders observed and provided further information.
- Channels were brochures and publicity board, which were easily accessible by local people. Additionally, the media were disseminated to local people via the village meeting.
- Messages included definitions and causes of global warming and climate change, sources of greenhouse gases and the impacts occurring near the community including pictures and statistics to present changes from past to present, as well as carbon storage data and greenhouse gas reduction from the community activities (Figure 1).
- Communication interventions included pre-communication knowledge assessment and information communication after having been co-designed with the NEV leaders. The NEV leader tried to point out about their surrounded situations, and the community activities that could help carbon sequestration and reduced greenhouse gas emissions, along with simple methods to reduce global warming. After that, post-communication knowledge was assessed and found that 80 percent of the local people who participated in the communication intervention had better understanding comparing with the period of no communication.

Figure 1: Publicity board co-designed by the NEV leaders and researcher to communicate with local people

4.2.2 Analyze communication strategies to drive low carbon community

From the above communication of NEV to drive low carbon communities, communication strategies could be analyzed as follows:

1) Communication process: Raising awareness and understanding of local people is an important starting step because most of them lack knowledge of global warming and climate change

and facing no direct impacts from climate change (Leknoi, 2017) . Meanwhile, the message broadcasted on the media have employed technical language which was difficult to understand. Therefore, the communication process should begin with understanding creation with the NEV leaders and local people on the impacts of greenhouse gas emissions, which have affected local livelihoods such as hotter weather, drought, more difficult to find local herbs, advantages and disadvantages of natural resource and environmental management activities that affect the reduction and sequestration of greenhouse gases. In order to enable the NEV leaders to understand and be able to communicate with people in the community, take part in conducting activities and changing behavior.

2) Sender: Key sender should be a community leader who is recognized by local people and has frequently communicated various information with local people (Sereenonchai et al., 2019). The leader selected to communicate in this study is well-known and respected by local people. He is also a hospitable, dedicated and self-sacrificing headman including develop the community in economic, social and environmental aspects, starting from the community until having the agencies to support. He has also persuaded and done activities for the community to realize the positive effects, such as waste sorting and throwing it into the bin, etc.

3) Media/channels of communication: The easily accessible media chosen by the NEV to communicate with local people were brochure and publicity board, which could understand by local people afterwards. After the NEV leaders have jointly produced the media to distribute through village meeting, which are organized every month and most people in the community gathered in this forum. In addition, the publicity board communication through the learning center, use of voice lines which is often employed in the community, and use of line group to communicate with groups of people outside the community.

4) Language use: Words that are easy to understand and local language can lead to behavior change and to take part in activities that support global warming reduction because the community is familiar with the local language. This finding is in line with Sereenonchai et al (2019) mentioned that using language that local people can easily understand, particularly local language which could reflect the sociability and readiness to help create or adjust for better community.

5) Message: The messages or content to communicate with local people should be highlighted as follows:

- Ask the questions for though provoking, such as asking if the weather is getting warmer today compared to the past, then link to its cause and point out the impacts happening near the community.

- Use a comparison method to visualize clearer picture by comparing the situation closed to local people, such as declining agricultural productivity and harder forest finding due to fluctuating weather conditions.

- Communicate current national actions linked to greenhouse gas reductions, and practices that local people have seen through various media, such as the announcement of free plastic bags ban from convenience stores, etc., and how the activities that they have participated with the NEV have helped to reduce global warming.

5. Conclusions

The implementation of natural resources and environmental management activities of the NEV and people in the community arise from realizing the problems, impacts, jointly plan and take action, jointly communicate through channels that the people can easily access, such as, voice along the line for people in the community to continually participate including agencies to support. The activities carried out are in line with the low carbon city strategy: 1) City of Trees, trees planting and forest ordination; 2) City of Waste Minimization, waste management at the source and campaigning for households to sort waste, make benefits of waste, keep the village clean, the campaign to reduce plastic bags usage and using wicker baskets produced by

the community or cloth bags, and plowed agricultural waste to reduce open burning; 3) City of Energy Efficiency, having the idea of using solar energy; and 4) City of sustainable consumption, growing vegetables in the household and producing food ingredients to reduce travelling to outside community. Communication strategies that promote the NEV's role to support a low carbon community include:

1) Raising awareness of the NEV to understand the activities and ways that support low carbon community, to be able to analyze greenhouse gas data and compare it into value or the benefits that local people will receive clearly, as well as communicating information to the community to understand and participate in activities continuously.

2) Communication techniques focusing on language use to be easily understand, especially local language in order for local people to be familiar and dare to exchange ideas, gain understanding and lead to behavioral change including to take part in global warming reduction activities.

3) Use media that is easily accessible to local people, such as publicity board, brochure, through voice lines, village meeting, learning center and line group to create learning, understanding and stimulating actions.

4) Communicate messages with thought provoking, comparing present and past weather experiences, and the current actions for global warming reduction.

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