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Community Participation in Sustainable Management of Community Forests: Case Study Ban Mae Hong Khrai, Mae Pong Sub-District, Doi Saket District, Chiang Mai Province

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Abstract--- The objectives of this research were to 1) study the potential and obstacles in community forest management 2) study the level of community participation in community forest management 3) propose a guideline to promote the participation of sustainable management of community forests. This research methodology for this study includes a combination of both quantitative and qualitative methods. Data for the quantitative method was collected from one representative of each household and it was used to analyze statistics such as; percentage, mean and standard deviation. And data for the qualitative method was collected from the community leaders, Community Forests Committee, People's Representative Representatives from government and private sectors consisting of 16 people, using in-depth interviews, discussion, and questionnaires as research tools. The results of the study showed that the potentials of the community forest were abundant and consist of various biodiversity. The community forest is useful, and it benefits the people because It is a source of food and it generates extra income, it's a learning centre and an ecotourism centre. The major problems and obstacles encountered in the management of the community forest are Participation of the community forest has not yet reached its full potential.

Keywords---biodiversity, community forest management, community participation, community forests, peoples representative.

Introduction

The term "community forest" is a term that originated during the past 30 years as an alternative to forest ecosystem resource management allowing the community to serve as the base or serve as joint resource management of the community, that has a practical way of being a group or a shared resource system of the community. If we talk about the term "community forest", it can have many meanings. However, the term community forest has been given different meanings, for example:

- Community Forest refers to land. or forest land that the community has taken or is permitted by law to operate with a competent official to continuously manage forestry activities, which must be governed by applicable rules, regulations, codes, and programs that might also be consistent with the beliefs and culture of that local community. However, the management of community forest is for conservation and allow the community to sustainably use the forest.
- The broader meaning is a forest that the people, or group of people in the community jointly preserved for the benefit of that community and also allow the people to benefit together.

At present, the management of community forest essential for the nation and the world. If there were no forests, it would not be any different from the eastern countries. Forests are air purifier and give shades, it helps in terms of moisturizing, and cause rainfall according to its season. It is a good source of food and is an important supermarket for the community. Because the forest is a rich area with many kinds of plants, big animals and insects, collection of herbs that people in the community relied on for use. Moreover, the current situation in Thailand found that the Invasion and clearing of forests for agriculture purpose, chopping trees for fuel, burning charcoal, or even burning forests to hunt for food, consequently, cause a reduction in the forest area and has become something to be worried about. Based on previous data to date, it was discovered that Thailand forest area is likely to remain at 171,586 square kilometres or about 33% of the land area. If compared the 50 years ago, we discovered that the forest area was reduced by 50 per cent. Forest area was destroyed at about 1/3 of Thailand area, about 155,885 square kilometres, or equivalent to 56 times the area of wildlife sanctuaries. Huai Kha Khaeng. Therefore, without proper forest management, our upcoming generation will not have the opportunity to witness forest area. Even government policies in the National Council for Peace and Order era showed some interest in forest conservation and management. We can see this from the forest reclaiming project. whether it is Phu Thap Boek forest, in Phetchabun Province

Doi Suthep, Doi Pui, in Chiang Mai Province, etc. Because in the present world, every country has started showing more importance to the forests, especially community forest which has been with the community, since the time of their ancestors (Wollenberg et al., 2000; Van Laerhoven, 2010).

Community forests are another method of community resource management by relying on the existing costs in the community, including the cost of natural resources (Bray et al., 2006; Hajjar & Oldekop, 2018). This requires social cost factor is the main access to manage, maintain, community forest. To maintain and take care of the forests located within the community, The community are not the only one involved in the management of the community forests. But there must be co-operation from all related agencies. Both government and private agency must come together as a helping hand in giving necessary advice, were applicable, equipping them with knowledge, materials, equipment, and also funding resources to boost the community potential for the management of community forest. Ban Mae Hong Kong Krai community forest, Moo 8 Tambon Mae Pong Doi Saket. Chiang Mai is a local forest with lots of abundance and biodiversity to some extent. Although some of the areas were destroyed based on some individual selfishness, the community has put in more evident efforts to protect, maintain and restore the forest to its highest order, through the efforts of the community leaders, community forest committee, and residents within the area. Therefore, result in the joint effort of maintaining the forest, which is the capital resource of the community. Thus, the researchers are interested in studying the potential problems and the level of participation of the Management of Community Forest. However, the result can be used as a lesson, knowledge, and experience of the community for a way to promote people's participation for stronger and sustainable management of community forest (Tosun, 2006; Prabhakaran et al., 2014).

Objectives

- To study the potentials problems and obstacles in the past management of community forest.
- To study the level of people's participation in the management of community forest.
- To propose guidelines for promoting people's participation in sustainable management of community forest.

Literature review

Theoretical concepts that support this research are the concept of sustainable management of community forests and the environment, the concept of public participation and the concept of participatory action research. The researcher synthesized important issues as follows: Concepts of community forest management and community rights to protect local resources. The highlight of this concept is that it is used as a base for setting guidelines for empowering communities to manage their community forests. including giving the community the right to protect and take advantage of the community forests that they maintain (Suntasombat, 1999; Thavorn et al., 2008; Pengjan, 2021). The definition of the community forest is a forest that the local community jointly

manages, conserve and restore, including and planning for sustainable use in terms of ecological, economic, and social. Local community comes in many forms, such as village community, sub-district community, and ecological community, therefore, the boundaries of community forests are related to different community characteristics. Nonetheless, the community forests have a common principle. Therefore, it is a public resource management system by community members for sustainability and the mutual benefit of the community. Community Forest or Social Forest has been defined by various organizations, agencies and academics as follows (Kaewmahanin et al., 2007). Department of Forestry defined community forest, whether as a social movement or a gathering of people's organizations at the community level and or network level within an ecosystem to utilize and manage soil-water-forest resources. This is considered a sustainable and fair common property of the locality based on a system of thought, wisdom, ideology and community rights, which emphasizes moral principles and the stability of the community's subsistence. Therefore, community forest is a concept that shows the relationship of forests with communities in such a way that the lifestyles of people in the community depend on forest resources. Awareness of rehabilitation is to allow villagers to take part in forest preservation. The villagers are aware of the importance of natural resources and the potential of the community. Based on the conservation of natural resources and the environment, transfer wisdom through culture and the community's belief system towards forests preservation and the villagers adhere to the system. Joint ownership will make all villagers have a common awareness of their rights and duties in managing, caring, and utilizing the community forest, create social networking and set rules and Penalties for violators.

The concept of public participation (Public Participation Approach) is an example of an idea that contributes to the process of communication or the exchange of information between members of society or the community to be more convenient. A strong community will happen. If community members are involved in communication, and exchange opinions with each other. Because the participation of members will be a community driving force to support the implementation of activities for the development of the community at each stage to achieve the community's goals. Researchers that had previously carried out researches on participation gave the following definition such as; Erwin (1976), said cooperation, joint action, and joint responsibility, whether individual or group. However, to enable operations, development and change in the desired direction. Public participation is an important strategy for community development. As a result, the implementation or implementation of various activities according to plans or projects will be effective. (International Association for Public Participation: IAPP) There are 5 levels of public participation: Level 1 participation at the information level, Level 2 participation at the level of consultation, Level 3 participation at the Involvement Level, Level 4 Participation at the Cooperation Level, and 5 Participation at the level of people empowerment. As for the public participation model for natural resource management, it is the participation in decision-making between the government sector and relevant actors in the form of a committee from various stakeholder groups. In particular, the decision to assess the impact of natural resource use Perkins (2011), and many other scholars, such as Arnstein (1969); Burikul (2009); Petts (1999); Sinclair & Diduck (1995), etc.

The principle of building public participation is an opportunity for people and involved individual in all sectors of society to participate with the government at all levels. There are academics, scholars and researchers who had previously researched public participation such as (Cohen & Uphoff, 1977; Cohen, 1996; Creighton, 2005). The active forms of participation can generally be summarized into four types:

- Public Information: The public and relevant authorities must be informed of the details of the project to be undertaken before a decision on the implementation of the project.
- Public Consultation: This is a form of participation in which discussions are organized between project operators and relevant individuals and those affected. To listen to their opinions and examine additional information.
- Public Meeting: to allow people and parties involved in the project or activities, including and decision-makers in the project or activity to use the public forum to make the people understand and find reasons for implementing projects or activities in the area.
- Decision making: the people will play a role in decision making but it depends on the composition of the committee representing the people in the area. An important aspect of participation in the process, and is summarized as follows in four main steps:
 - Participate in thinking, studying, and researching problems and their causes, as well as the needs of the community.
 - participating in the planning of policies or plans, projects or activities to reduce and solve problems.
 - participate in Decision making in organizing or improving the efficient resource management system and work to achieve the goals.
 - Participate in the control, monitoring and evaluation of work. Therefore, it can be seen that applying the concept of public participation in development is often a process that helps connect between agencies. Government sectors and other parties other than the government sector, such as the private sector, people, communities, and other organizations to have the opportunity to participate in thinking, making decisions, and working together in action and benefit from that development.

The concept of participatory action research: The highlight of this concept is that it's a method of studying the community with an emphasis on problem study, comments and local resources, to help resolve issues. The study process will use the method of sharing opinions from all sectors in the community to find problems. analyze the shortcomings of the current condition together, as well as jointly find a solution to the problem effectively (Angermeyer et al., 2004; Van Strien et al., 2009). By conducting a survey of resources in the community, both natural and human resources. Support and service from both government and private agencies in the area. Participatory action research relies on data collection at all levels, and most importantly, it is to find solutions to problems by emphasizing the participation of people and all sectors in the society (Mikkeisen, 1995; Praputnitisan, 2003; Punyanuwat, 2005).

Research Method

This research study on people's participation in the sustainable management of community forest. A case study of Ban Mae Hong Krai, Mae Pong Subdistrict, Doi Saket District Chiang Mai Province, was carried out with both qualitative and quantitative methods.

Sample Population and key informants were

Divided into 3 groups as follows:

- Key informants in terms of the potential context of the community forest include community leaders, community forest committees, and 10 representatives of people who are getting some advantage from the forest, Snowball sampling method was used in choosing the sample based on advice from the community leader.
- Population and sample used to inquire about the level of participation in the management of community forest consist of 260 people in the community, and 80 households. This was done by selecting one representative from each household to answer the questionnaire. Conditions of problems, obstacles and levels of participation in the management of community forest were in 5 levels. Level of getting involved in finding problems and causes of problems. Level of participating in the planning, level of participating in the operation, level of getting involved in receiving benefits, Level of taking part in the evaluation. And as for the approach to promoting participation in the management of community forest, there are forms and procedures for participating in the management of community forest and role of participation in the management of community forest with factors and conditions for participating in the management of community forest.
- The village leaders, community forest committee, government agencies, private sector, the people and other community organizations related to the management of community forest were the key informant during brainstorming and in-depth interview. They consist of 16 people.

Method of data collection

The study's data collection used a variety of methods, including analysis of documents and evidence in the community, the researchers study the history of the community forests from hearsay, documentary evidence in prints and media, walking to explore the environment in the community forest and the area around the community forest, semi-structured interview, in-depth interview, observing and taking note, informal conversation, and questionnaires.

Data analysis

• Step 1: Data from the interview on the potential context of the forest and management of community forest. The data were analyzed through content analysis to look at the relationship of content and examine the data by using triangulation.

- Step 2 Data from the questionnaire on the level of people's participation in the management of community forest. The data were analyzed by dividing them into 2 parts: Part 1: General Information of the respondents such as gender, age, education level, income level, settlement period in the area. These data were analyzed by calculating statistical percentage, and part 2, the level of people's participation in 5 areas. These data were analyzed by calculating statistical values, i.e., percentage, mean, and standard deviation.
- Step 3: Guidelines to promote community participation in the management of community forest. Data were analyzed by applying the results of the level of people's participation in the management of community forest. Through Focus Group, which was conducted to find ways to promote community participation in the management of community forest. Then analyze the content (Content Analysis) to see the relationship of the content and present the information in a descriptive form.

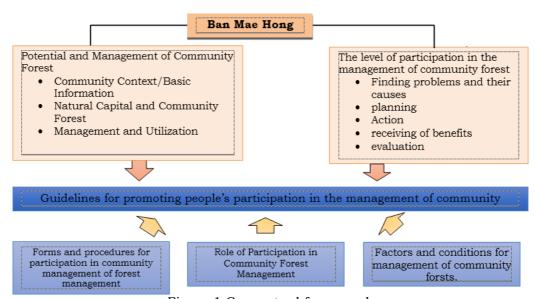


Figure 1.Conceptual framework

Research Result

Community potential, problems and obstacles in the management of community forest

Ban Mae Hong Krai Community Forest had been managed since 1987 by community leaders of all ages who saw the importance of the forest. They gather together to conserve, restore, maintain and take care of natural resources and the forest environment to be in abundance and more biodiversity. Making it another source of food and income generation for the people in the community. The utilization of community forests can be divided into three aspects:

• The use of permanent objects created in community forests include crematoriums, community sports fields, and police shelters.

- Utilization of biodiversity as a source of seasonal local food and additional income such as mushrooms and various vegetables, red ant eggs, bamboo shoots, bees, etc.
- Psychological exploitation, it's a relaxation centre and ecotourism site. In 2016, the Royal Forest Department was registered as a community forest with an area of 1,507 rai.

The management of their forest was under the rules of community participation and forest conservation. The management was divided into 2 groups, such as the community forest committee group. They were responsible for supervising and checking orderliness, watch out for forest fires and coordinate with neighboring communities. They serve as the main force in implementing management of community forest plan activities as well as coordinate with government agencies and external organizations. In terms of the general public, who are members of the community cooperate in participating in various activities, whenever they received news/order from the community leaders and some of them participate. Because most of them have some other duties to attend. Most importantly, some of them still have inconsistent opinions. In terms of problems in the management of community forest, we found that village members' participation in the management of community forest was not yet a complete circle (Siombo, 2021; Kupryashina et al., 2021). Community leaders and community forest committees agree that ways to enhance the importance and participation in activities should be sought accordingly. This leads to an analysis of participation levels and to find ways to promote people's participation in the management of community forest.



Figure 2. Participation in the management of community forest

To study the level of people's participation in the management of community forest

The results of analyzing the level of people's participation in the management of community forest were at a moderate level.

Table 1	
Community forest were at a moderate leve	e1

An	overview of the level of people's participation	\bar{x}	SD	evaluation criteria
1.	participation in problem-solving and the causes of management problems of community forest	2.76	1.09	moderate
2.	Participation in community forest management planning and decision making	2.3 9	1 .08	moderate
3.	Participation in community forest development and management	2.70	1.11	moderate
4.	Participation in receiving benefits from community forest management	2.89	1.19	moderate
5.	Participation in the evaluation of community forest development and management	3.08	1.01	moderate
Total	-	2.86	1.10	moderate

The results of the study and analysis of data from the sample group of informants revealed that, in general, people living in the surrounding community forest areas participated in community forest management at a moderate level. Which is considered to be at a level that is still satisfactory, however, if there are interesting future activities carried out to develop the community forest area, it may lead to ways to promote the participation of the people in the management of community forest to be more efficient. Based on data retrieved from a questionnaire, it reflects the opinions of the sample group regarding their impression on participating in the management of community forest activities in the past. It also made us aware of the approach to enhance the participation of the people in the sustainable management of community forest in the future (Jones, 1996; Paoletti, 1999).

To present guidelines for promoting people's participation in sustainable management of the community forest

Guidelines for promoting people's participation in sustainable management of community forest comprise of suitable model for management of community forest demonstrated in two forms such as; Traditional cultural management of community forest and multi-purpose development and management of community forest. The process to promote participation in the management of community forest is to raise awareness/consciousness, the value of natural resources, the creation of interesting and appropriate activities for the management of community forest and the promotion of community forest groups and networks. All sectors, both within the community, the public sector, the private sector, as well as educational and religious institutions, participated and fully played their roles and duties according to their missions and conditions, which can be summarized in the following diagram:

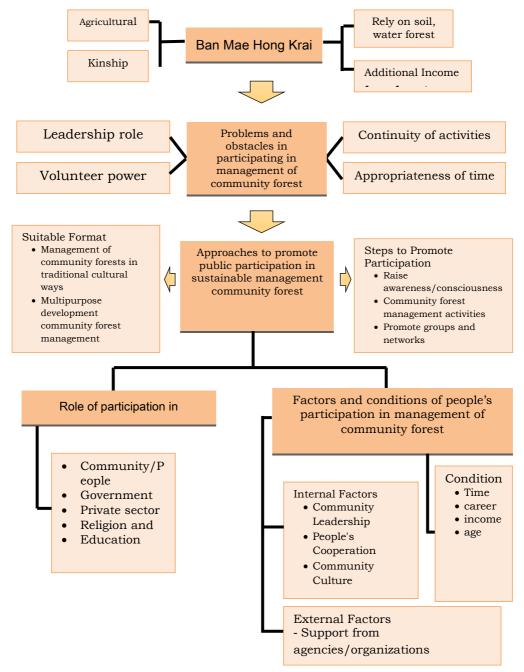


Figure 3. Guidelines for promoting people's participation in sustainable management of community forest

Result Discussion

Key issues discovered following research objectives; thus, the researchers presented the discussion for the following objectives: The potential for community

forest management in the past found that community forests were registered in 2016 with an area of 1,507 rai. The community joined to conserve, maintain, care, restore and protect mixed deciduous forest trees, including important and economically valuable plant species. Which is consistent with the research results of who studied Public Participation in the Management of Community Forest: A Case Study of Khok Kralong Pong Daeng Community Forest, Nong Ruea Subdistrict, Na Chueak District, Maha Sarakham Province. The result of their research found that the surrounding communities depended on the community forest both directly and indirectly, such as using it as a food source, herbs, building materials, energy sources, and performing rituals according to their beliefs. It is also a learning centre on nature and biodiversity and following the results of the research analysis of Pengjan (2021), on Public Participation regarding Community Rights in Natural Resources on Koh Klang Bang Talu, Surat Thani Province found that The government and the people cultivated and strengthened the community's awareness of the community's right to preserve natural resources and the environment. And also preserve the traditional rights, maintain cultural values, preserve the rights of local wisdom by linking relationships based on the concept of sustainable development together. Hence leading to joint preservation of "Klang Bang Talu Island" (Pengjan, 2021).

Problems and obstacles in the management of community forest, the researcher found that some people and outsiders are still illegally cutting down trees. And there are still some problems with forest fires and droughts. But now this problem has been reduced. The main problem remains the participation of the people in the management of community forest, the villagers pay much attention to this issue and they needed it to be addressed to enable more people to participate in the management of community forest. This was consistent with the concept, who said that the utilization of community forests faces many problems such as deforestation, smuggling of rare plants out of the forest, wrong methods of obtaining forest products, such as the people believe in burning the forest so that sweet vegetables and fungi will bloom, etc., are, therefore, from the above problems, it is required to establish rules for managing each community forest This regulation varies according to the context of each area.

The level of people's participation in the management of community forest

The result of this research found that it was at a moderate level. However, people who live in the community mostly engaged in agriculture and general labour. Therefore, there is some time to participate in the management of community forest activities, but not much, due to the participation of the people in the management of each community forest were ordered from the community leaders. Therefore, the people only participated in their understanding of the management of community forest. This was consistent with the research study, on guidelines to encourage participation in the management of community forest of Khao Khlung, Khao Khlung Subdistrict, Ban Pong District Ratchaburi, it was found that the overall level of community participation in the management of Khao Klung community forest was at a moderate level.

Guidelines for promoting people's participation in sustainable management of community forest

There are two suitable forms for participatory management of community forest such as Traditional cultural management of community forest management. This is done by using traditional rituals to connect with the community. They make this method to be the anchor of the minds of the people in the community and as a gift for the community to come together to conserve the community forest for the common good of the people. The second form, the multi-purpose development for the management of community forest. This will be done by managing the community forest areas to provide other benefits to the people, such as sports fields, crematoriums, patrol accommodation and shops selling forest products in the community. This will be an arrangement for economic benefits in the community as well. This was also consistent with the concept of Dusit Vejkit that mentioned 3 models of community forest management. Model 1 Conserved Community Forest; It is a model for community operations to conserve the environment, soil, water, etc., and prevent natural disasters. As well as local beliefs and traditions. Model 2 Economic Community Forest It is a model for community forest operations in the hope of economic returns in the form of tree and forest products. Model 3 Multipurpose community forest. It is a model of community forest operation with the hope of conservation and economic rewards at the same time. There are both natural forests together to solve problems from the management of community forest.

Role of participation in the management of community forest. Based on the research study, the role of participation in the management of community forest can be divided as follows:

- The role of the community or the people. It is a very important role for participation in the management of community forest. This is because it is the main force in driving various activities to be successful and promoting participation in the management of community forest to be more effective.
- Government agencies. Huai Hong Krai-Khun Mae Kuang Forest Fire Control Station Play an important role in supporting the budget and equipment for forest maintenance. Mae Pong Subdistrict Municipality, promote participation in policy formulation and activities in local development plans to support budget and community forest management activities. The Forest Resources Management Office 1 (Chiang Mai) plays a role in providing knowledge and understanding about community forests. District Hospital, promote a healthy district. Their role is to explore and study medicinal plants in the community forest and apply them as traditional herbal medicines.
- The private sector plays a role in promoting participation in the management of community forest in terms of budget support for activities. Or support materials, equipment and tools for community forest management, including the Mae Fah Luang Foundation, Raks Thai Foundation Sustainable Ecological Development Association.
- Educational Institutions; plays a role in making local courses, providing the study of natural paths and plants in community forests. Including participating in community forest development activities every time.

 Religious institutions; plays a role in promoting participation in community forest management by being a medium of public relations for community forest management activities and inducing Buddhists to participate in religious ceremonies on important days such as forest ordination ceremonies, dharma practice.

The result of our research was consistent with Prasit Dankulprasert, the community participates in the management of the Khok Yai forest. But overall, it was still at a moderate level. The community leaders, community forest board, community forest rules and support from other community organizations is at a high level. As for forest dependence, belief in sacred things to preserve community forests system, news systems, religious institutions support from government agencies and support from private-sector agencies were at moderate.

Factors and conditions for participating in the management of community forest. The researcher divided the factors of participation in the management of community forest into internal factors and external factors. The factors within the community that promote participation in the management of community forest were mostly community leaders. They are important factors in driving the development and management of forests. community Because the management of community forest was carried out /done based on the order from the leaders to the people, who jointly participate in the management of community forests (Zulvany, 2020; Nyandra et al., 2018). Another factor with much importance is the people or members of the community, they are the force in the implementation of community forest development and management. External factors involve the participation in the management of community forests. Which include support from external agencies both public and private sectors. Conditions for participation in the management of community forest include time conditions, Management of Community Forest is volunteer work that requires a considerable amount of time to operate. Individual participation in the management of community forest may require a combination of time. occupation and income conditions, due to the different occupational characteristics, the incomes are different. Most of the people in the community work as farmers and general contractors, therefore their income is uncertain. The last condition is the age condition. Most of the people who have enough free time to participate in community forest development activities are rather old, which may hinder their participation (Jing, 2017; Prayoga et al., 2015).

Conclusion

Ban Mae Hong Krai Community Forest Area of 1,507 rai has been maintained by the community until there were much abundance and biodiversity. The community has been taking advantage of the community forest as a source of food in the household and have additional income from the sale of seasonal forest products, learning resources and ecotourism. The important problems and obstacles encountered in the management of community forest are the lack of participation from people in the community to their full potential. Because the timing and continuity of the activities are not in line with the needs of the community. Therefore, the demonstration of volunteer spirit for participation in the activity is not as intense as it should be, causing the level of people's

participation in the management of community forest to at a moderate level overall. In terms of suggestions on appropriate forms for the management of community forest, to promote community participation in sustainable management of the community forest. According to the result from this research study, there are two forms such as 1) management of community forest in the traditional cultural way; 2) management of community forest in a multi-purpose development model. In terms of steps to promote participation in the management of community forest, it consists of three steps; 1) Creating awareness of the value of natural resources 2) Creation of sustainable management of community forest activities 3) Creating groups and network partners to drive the goals. However, there must be factors that are important elements for participating in the management of community forest, such as community leaders, community forest committees, people, community members and support from outside agencies under the conditions of time, occupation, income and age of the involved people. Nonetheless, all these components can promote community participation in the sustainable management of community forest.

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