



Promotion of Ethnoecology knowledge and Local Wisdom for Sustainable Development: A Case Study of Highlands Ethnic Communities of Ban Mae Ka-Piang, Saluang Subdistrict, Mae Rim District, Chiang Mai Province

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Abstract

This study is an action research focusing on community participation towards natural and environmental management which is the basis of living. Population and sample used in this study combine with 69 villagers and 15 local philosophers and community leaders. Questionnaires and interviews cover the fundamental issues of natural resources, including soil, water, forest, resources utilization, and resource management using local wisdom based on four basic needs. The results showed that the way of life of the villagers is consistent with natural resources and the environment as follows: 1) the community maintains knowledge and uses local wisdom to manage natural resources and the environment. 2) The relationship model of local wisdom on natural resources and environmental management of the community represents the relationship between people to society, people to the superstitions, and people to natural resources and the environment. 3) The community has the potential to manage natural resources and the environment that leading to a model community practice of sustainable development. The community has strengths in the abundance of agricultural areas, lifestyles and cultures that coexist with forests that can develop community natural trails, and be learning areas for youth that connect the relationship between local scholars and community people at all levels. These factors contribute to the strength of the community which is the goal of sustainable development.

Keywords: ethnoecology, knowledge, local wisdom, resource management, sustainable development

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6263

Introduction

The development of the country in the previous half-century has reflected the development of a society that focuses mainly on economic growth and leads to a more urbanized society. This has resulted in community identities being dominated by

Western development theory. Moreover, it changes the values of people in rural society in various aspects like local cultural values that have been replaced by new and materialistic values, the community's rate of forest loss, environmental destruction, and water and air pollution. These impacts made the community



unable to cope with the pressures of economic expansion, leading to the failure of rural development. However, localization has emerged in tandem with developments in the midst of globalization which is consistent with the sustainable community concept of the past decade. This represents an attempt to ascertain the clarity of development. In the past developments of Thai society, people have learned about both failures and successes. This gives rise to development approaches in various fields that focus on people's processes. Therefore, the concept of a sustainable community is in line with the global society concept in the era of sustainable development, especially in terms of environmental and human resource development (Kaewhawong. T, 2013).

Sufficiency Economy Philosophy is the principle of life that King Rama 9 has given to Thai people since 1974, with emphasis on human development on the basis of self-reliance, moderation, rationality, carelessness, awareness of theoretical correctness, and morality in life. This theory has a working principle of understanding, accessing, and developing that is consistent with the "geographic society" that places importance on the diversity of ecosystems, economies, cultures, and traditions for the benefit of the people. The people are involved in decision-making. This will be a development aimed at self-reliance. There were experiments with persistence until they were confident. Therefore, it was published to the public by emphasizing "people" as the center of development. In addition to human development, the factor of a strong community is a leader with knowledge and the ability to build trust which is important to enhance the capacity and strengthen communities. In order to develop a large unit of the country to be sustainable, there must be the development of sub-units to be strong, stable, and sustainable which are communities with the fundamental factor of people development. (Thammalangka. S, 2013) Living in harmony with natural resources and the environment, humans need to adapt to change. Humans are part of an ecosystem that has relationships with other

living things such as forests, wildlife, and non-living things that make up the ecosystem under various interconnected systems that create a balance. Human beings have the necessity to rely on and live in ecosystems, way of life, and community culture related to soil, water, and forest management, which is regarded as the "wisdom" that is fundamental to rural life. (Nakabutra. A, 1993)

Karen, or Pka-Kyaw, are considered to be the largest ethnic group in the highlands in Thailand that have lived in the "forest" since ancient times. Karen's crop rotation shows the way of life of those who are attached as "forest lovers", showing a paradigm towards social and cultural phenomena in various dimensions like physical, agricultural production system, and cultural that are connected and supportive to the forest ecosystem. (Anuphanpong. A, 2007) This can be regarded as the local knowledge on natural resources and environmental management under the cultural ecosystem that reflects the relationship between ethnic wisdom on natural resource management and the highland environment.

Mae Ka-Piang Karen community is an ethnic community that has lived in the forest for a long time. The community has a lifestyle that is consistent with natural resources and the environment which is accepted by people within and nearby communities through the use of wisdom to adapt to the physical, social, and cultural environment through the process of transferring and accumulating that wisdom for many generations. Therefore, it can be seen that the social patterns and relationships arising from the use of such resources are based on the subsistence of forests or the surrounding forest land which is an important condition that causes conservation. (Chaiyot. N, 2013)

Mae Ka-Piang community, village number 8, is located in Sa-Luang sub-district, Mae Rim district, Chiang Mai province. The village was established in 1971. The villagers are all Karen ethnic. Over 60 years of settlement in the area, villagers emphasize conservation and co-living with forest. The community has preserved its culture such as attire, recreational activities, etc. Traveling to



the village from Mae Rim District Office takes approximately 11 kilometers. The researcher is interested in analyzing the promotion of ethnoecological knowledge and local wisdom for sustainable development in the Ban Mae Ka-Piang Highlands through the process of participation of local communities towards natural resource and environmental management which is reflected through the relationship model of local wisdom that is passed on through generations to find guidelines for community sustainable development models.

Research Objectives

1. To study the local wisdom towards community resources management.
2. To analyze the relationship model of local wisdom towards community resources management.
3. To explore the potential of local communities in resource management leading to the guideline of a sustainable community development model.

Research Methodology

This study was conducted through the Action Research method using in-depth interviews, group discussions, knowledge-sharing panel discussions, and transferring local wisdom by local philosophers who are the key informants of this study. Appreciation-Influence-Control: A-I-C was used to gather ideas from villagers using brain-storming, SWOT analysis, mind mapping, and data of local context, history, social, culture, tradition, ways of life, local wisdom, and community participation towards natural and environmental management which are the bases of the community.

Population and Sample

The population and sample in the study were groups of local residents, leaders, and philosophers of Ban Mae Ka Piang, Saluang sub-district, Mae Rim district, Chiang Mai province. General information was gathered from 69 households. An in-depth interview was used with 15 samples from purposive sampling including community leaders, spiritual leaders, local philosophers, elders, and community representatives.

Research Instruments

This study uses both qualitative and quantitative research instruments which are divided into 3 parts as follows:

1. The observation was a tool used to study the context of Ban Mae Ka Piang community, Village No. 8, Saluang Sub-district, Mae Rim District, Chiang Mai Province in order to understand the basic characteristics of a community including history, community map, geography, climate, society, economy, natural resources, environment, and the formation of groups and organizations.

2. A questionnaire is a tool used to study the basic characteristics of the community including the application of local wisdom in the daily life of the villagers.

3. An interview is a tool used to study lifestyles that are consistent with natural resources and the environment through land and natural resource use patterns. The interview form for local wisdom knowledge on natural resources and environmental management of the community consists of local wisdom and natural resource management, soil, water, forest, and utilization of local wisdom based on the basic needs including the relationship model of local wisdom and the community's potential towards natural resource and environmental management leading to sustainable development mode. The data collection methods were structured interviews, in-depth interviews, and focus groups using SWOT analysis.

Data Analysis

This study analyzes data obtained from questionnaires using percentage, mean and standard deviation (SD) statistics. The results were presented with descriptive analysis for explaining the knowledge base of local wisdom on the management of natural resources and the environment (soil, water, and forest) and the utilization of local wisdom based on the four basic needs which is a qualitative data analysis.

Research Findings

The ethnic community in Ban Mae Ka Piang has a lifestyle that is consistent with natural resources and the environment through the use of land and natural resources. This shows that natural resources have always been



essential to the livelihood of people in the community. People in the community love and cherish the natural resources in the community. There is a clear demarcation between the occupational and conservation area. There is a way to manage forests by a committee of forest supervisors who work to prevent intruders. Everyone in the community can use the natural resources of the community equally. The community has a belief in God (Jesus) who protects the natural resources and environment within the community. They pray to God to protect the forests, land, and waters of the community as a belief in supernatural and natural resource management.

However, the problems related to natural resources occurring in the community may be few and appear at certain intervals, such as the problem of smog caused by other villages. The community cooperatively solved the problem by building firebreaks to prevent bushfires from spreading and to reduce the problem of forest fires in the dry season. But the main problem is that outsiders come to illegally cut down trees and find forest products causing the community to set up a group to protect natural resources and the environment in order to monitor such an invasion.

The increase in the population and the expansion of houses cause changes in natural resources in the community. The restriction of farmland has resulted in the depletion of natural resources from the past and the

encroachment of the forest from outsiders. The way of life of the people in the community is mainly related to natural resources relying on resources from forests, soil, and water. There are activities to rehabilitate and conserve natural resources in the community, such as forest inspections every 2 years, setting up rules for forest conservation and monitoring watersheds, conserving embroidery and weaving for the new generation, etc.

The study of promotion of ethnoecological knowledge and local wisdom for sustainable development in the Ban Mae Ka-Piang Highlands: a case study of Mae Ka-Piang village, Saluang sub-district, Mae Rim district, Chiang Mai province has the following results;

1. The community's local wisdom knowledge towards natural resources and environmental management of Mae Ka-Piang village: General condition of natural resources, resources management, local wisdom in resources management, and utilization of local wisdoms based on human basic needs which are food, clothes, accommodation, and medicine are presented. Although the villagers changed from urbanization to more modern medical treatments, 13.04 percent of the villagers use herbs and traditional healers along with modern medicine, which shows a lifestyle that is relied on natural resources and the environment.

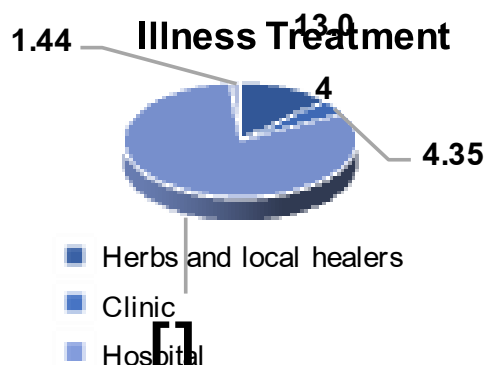


Figure 1: Illness Treatment
 (Boonchaleow, N., Sangsod, S., 2021)



Most of the community areas are loamy soil suitable for cultivation which produces quite high yields. The forest condition is fertile as can be seen from the lush greenery surrounding the community. Clay will only exist in certain areas. Sandy soil is rarely seen in the community. Most of the soil resource management is through agriculture which is the main occupation. Organic fertilizers, manure, and chemical fertilizers are used to nourish the

soil. The topsoil is also plowed after rice planting and the soil is rested during the post-harvest period to allow the soil to recover from the farming. Cows and buffaloes are released on farmland in order to leave their excreted to nourish the soil. Local wisdom and soil resource management is "rice planting culture" which has been passed down from generation to generation, whether it is tilling, land preparation, making terraced rice fields, etc.

6267



Figure 2: Fertile soil and soil utilization
(Boonchaleow, N., Sangsod, S., 2021)

The community uses water from "Huai Mae Ka Piang" which is the only natural water source in the community for both consumption and agriculture. This creek flows down from the watershed in the deep forest with water flowing all year round. During the summer, there will be fewer water flow problems and cloudy water problems during the rainy season. Chemical contaminants have been found in agriculture in the Huai Tao Roo village where the Mae Ka Piang creek flows making it unable to be consumed. Due to such problems, the Ban Mae Ka Piang community has to convey water from watersheds that are quite far away. Each household had water tanks to store drinking water from mountain water pipes and some had groundwater wells. For water resource management, the Ban Mae Ka Piang community has a mountain water supply system. If there is a problem with the system, the villagers will work together to solve the problem. Problems encountered will vary according to season. During the rainy season, there will be problems with clogged pipes and

broken pipes. In the summer there is often a problem with less water. Therefore, it is necessary to set the water usage schedule for the villagers who plant the lychee plantation in order to manage the effectiveness of water use.

Karen ethnic group has knowledge from the traditional beliefs of their ancestors that "If there is a wild banana tree, there will be water for use all year round," which is a wisdom that pays attention to the reservoir of moisture. It is also a natural forest firebreak. In addition, wild banana is a plant that can be used in a variety of ways, including leaves, fruit, stems, and banana heads, which villagers can use but are not allowed to cut the tree. Besides, villagers will not build housing or farm near watersheds. Because it is believed that the water will dry up. The community cooperates with related agencies like forest officers to maintain the community's water resources such as making dams or reforestation activities. This is considered local wisdom in resource management through the social capital of the community.



Figure 3: Natural source of water
(Boonchaleow, N., Sangsod, S., 2021)

Most of the forests in the community are dense forests with various species of plants reflecting the abundance of nature. The community has divided forest areas into community forests that villagers can take advantage of and conservation forests which are strictly prohibited by villagers to leverage. The people in the community take advantage by finding forest products to cook in their households. Ban Mae Ka Piang community forest has no problem with deforestation. But there is a problem of erosion and landslide. During the rainy season, there is a problem with flash floods. The community attaches

great importance to the conservation of forests in order to be fertile. Villagers bring wood from the forest to build houses and if it is a large tree, permission must be obtained from the community leaders and the Forestry Department. When the villagers are going to use the farming area, they must ask for permission. The officers will come to survey the land to prevent the intrusion of the forest area and must cultivate agricultural crops in the specified area only. There are no title deeds in the community. However, the right to possess the land can be inherited within the family.

6268



Figure 4: Community's abundance forest
(Boonchaleow, N., Sangsod, S., 2021)

Villagers have the conventional wisdom to coexist with forests without causing damage. If there is a need for resources in the forest, they will be used wisely. Villagers will not change the ecosystem of the forest. In addition, the community has the wisdom of

millet, which is used to decorate the unique fabrics of the Karen ethnicity. But since millet is difficult to maintain, villagers prefer to curl cotton into a knot to make a bead-like space in the middle and use it instead of millet. The community also has the wisdom of dyeing

natural fabrics from the bark or some plant roots that the community's housewives use to dye the fabric to get the desired color.

2. A model of local wisdom relationship towards natural resources and environmental management of ethnic communities in Ban Mae Ka Piang It can be clearly seen that the community has knowledge that is related to “local wisdom”, whether 1) the interpersonal relationship or relationship between people and society shown through arts, recreation, weaving handicrafts, and community forest conservation activities. In terms of customs and traditions are seen through activities like worshiping God or Jesus every Sunday, New Year's Day, Christmas, and Weddings that are unique to the local area. The community's unique

dialect is the Karen language. 2) The relationship between people and the supernatural: the community worships God or Jesus who represents the light of life. As for beliefs, Ban Mae Ka Piang is a community with rules forbidding the distribution of wild things outside the area. If outsiders come to catch wild animals, there will be a ceremony to release the animals back into the forest. 3) The relationship between people and natural resources and the environment is viewed through agriculture based on natural resources and the environment in the area. Especially in regard to the four factors or basic necessities for human life such as clothing, medicine, food, and shelter. Every year, representatives from the Royal Forest Department come to inspect at least 10 times a year.

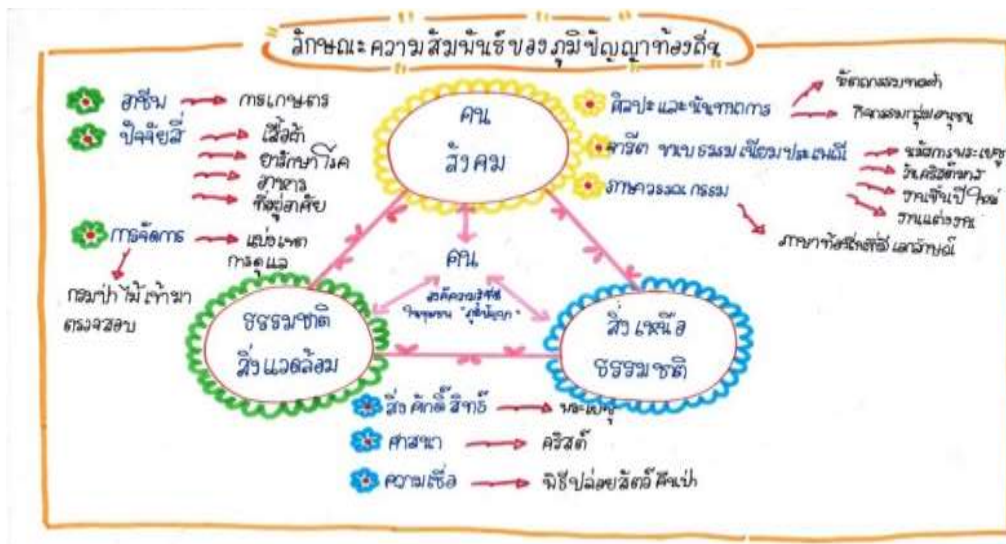


Figure 5: Local wisdom relationship analysis (Boonchaleow, N., Sangsod, S., 2021)

3. The community's potential in managing natural resources and the environment leads to the sustainable development model. From internal factors, the ‘Strengths’ of the community are fertile agricultural areas, cultures coexisting with forests, cooperation of people in the community, and measures or agreements in the community for the equitable use of resources. While the ‘Weaknesses’ are that people in the community have become unable to take care of the forest thoroughly due to outsider encroachment, trees and some wildlife are lost,

water is insufficient during the dry season, and water retention points are scarce. For external factors, the community gets a chance (Opportunities) from government agencies such as the Department of Community Development and the Department of Provincial Administration to organize activities, training support, and promote the establishment of groups in the community such as enterprise groups, consolidating professional groups for the community on a regular basis. In terms of threads, although there are government agencies involved in forest or land management



to take care of them, they are not taking serious action. In addition, the arable land adjacent to the forest reserve area causes the intrusion problem of people outside the community. Moreover, the community has a problem with a lack of utility services such as transportation routes electricity, and telephone.

From the survey of the natural resource and environment database of the Mae Ka Piang community, it can lead to the development of the

community's nature trails which is an important learning resource and perform as a study area for young people that can connect the relationship between local philosophers specializing in the resources and medicinal plants that exist in the community, and as a place to connect people in the community. Mae Ka Piang community's nature trails will create a collective consciousness that will show the appreciation of the importance of natural resources and the environment that will lead to community strength and sustainable development.



Figure 6: Community's nature trails
(Boonchaleow, N., Sangsod, S., 2021)

Initially, 6 nature trails can be laid in the community starting from the main route from the village entrance that villagers use to roam and connecting to another route that is a concrete road. Most of the resources on this main route are vegetable and fruit orchards and home-grown vegetables. **Route 1** is adjacent to Mae Ka Piang creek and villagers' rice fields. Along the way, there are vegetables that grow naturally including those that the villagers have planted. **Route 2** starts from the beginning to the house of the assistant village headman up to the hill-top forest where there is a variety of herbs and wild vegetables. **Route 3** From the starting point to the end of the gravel road is a residential area leading to the villagers' plantations, where there are various kinds of

fruits such as jackfruit, lychee, durian, and banana. In addition, there are various herbs and various plants along the way. **Route 4** is a path for various medicinal plants, which is about 100 meters away from the main road. The overall area is a community forest with many large trees both reserved and common. **Route 5** is a path that separates from Route 4, heading to Saluang forest, where there will be some trees and herbs. Most of them are vegetables and raw materials that villagers use to cook in their households, such as wild bamboo shoots, eggplants, banana stalks, cauliflower, and wild vegetables. **Route 6** is considered the most fertile path, with large trees and a wide variety of plants, and have the opportunity to meet a variety of animals.

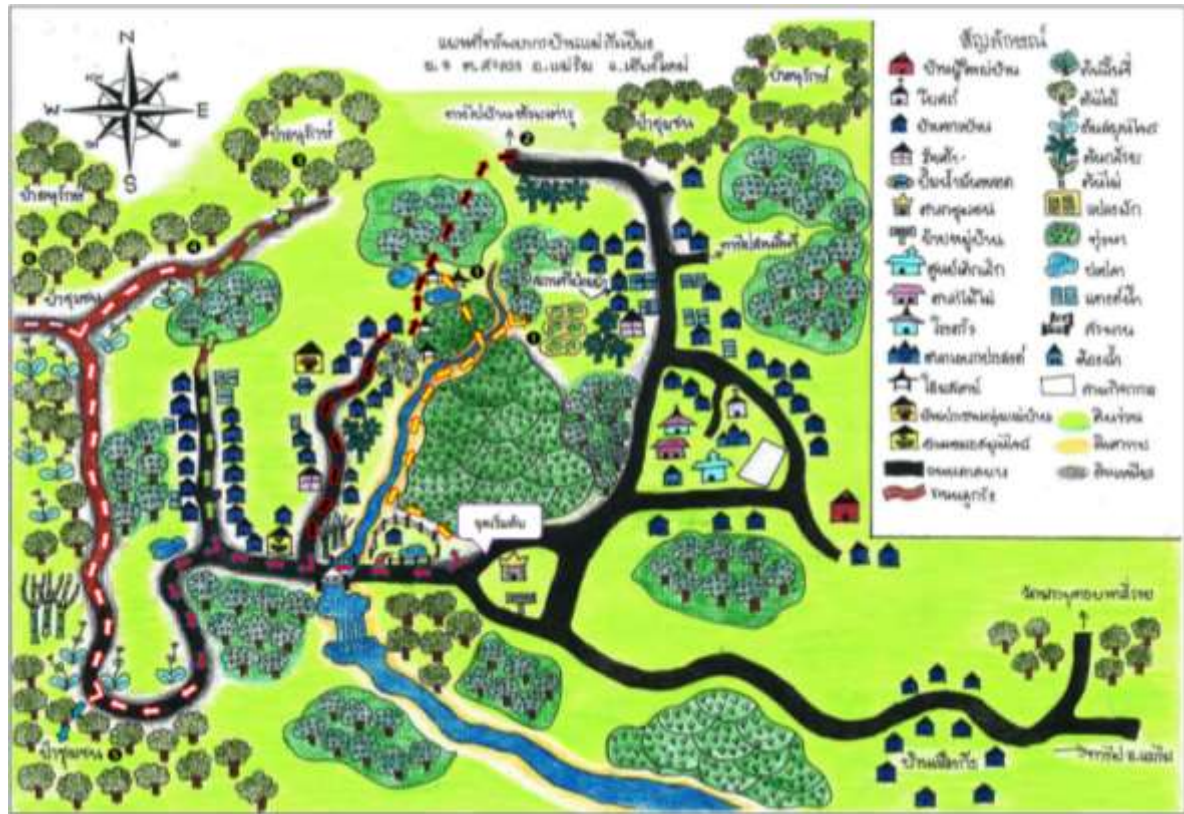


Figure 7: Mae Ka Piang Nature Trails (Boonchaliew, N., Sangsod, S., 2021)

From analyzing and synthesizing related literature, observing, in-depth interviewing, forum discussion, and participating the way of Karen life at Mae Ka Piang village, characteristics of sustainable development model communities can be summarized as FICES: Sustainable Education Community Identity Faith models. (Sasong, S., 2021)

This model shows that belief and faith are important identity bases of the Karen ethnic group at Ban Mae Ka Piang. Communities are conserving and transferring knowledge on resources, nature, and environmental management through a community organization structure in the form of a philosopher, a wisdom teacher, and a Ban Mae Ka Piang Child Care Center School that reflects strength and sustainability. The model consists of the following characteristics:

1. Faith: This is the belief in supernatural things such as gods, ancestors' spirits, forest guardians, ghosts, etc. These beliefs are deeply ingrained in the life of the local community for a long time through

various rituals such as sacrifices, and ceremonies. religion, including faith in God which is the heart of the life of the Karen ethnic at Ban Mae Ka Piang.

2. Identity: The Karen identity of Ban Mae Ka Piang has continuously maintained its own styles, concepts, beliefs, cultures, traditions, and ways of life until becoming a distinctive identity that has been passed on through generations.

3. Community: This consists of relationships between community leaders, religious leaders, spiritual leaders, village scholars, elders, and youth in the community who all have love, unity, and generosity. They are ready to conserve and will continue to pass on ideas, beliefs, and Karen identity.

4. Education: The community, in cooperation with the school, transfers ethnic knowledge to student to learn and absorb the culture and lifestyle of the Karen ethnic group.

5. Sustainable: The Mae Ka Piang Karen ethnic community has preserved and

applied traditional beliefs in accordance with modern Christian beliefs. Ways of life in various dimensions have been passed on to communities, civil society, and educational institutions until they become knowledge of Karen identity. The community is continually conserved, learned, and passed on to youth groups. The community is also presented to the general public about the beauty of the Karen ethnic culture and identity until it becomes strong and sustainable.

From the above-mentioned model, it can be applied in the Ban Mae Ka Piang community as “FICES: Sustainable Education Community Identity of (Mae Ka Piang Karen) Faith” towards resource management leading to community guidelines of the sustainable development model. This practice can be passed on to other communities.

Discussion

From this research, it can be seen that the Karen ethnic community at Ban Mae Ka Piang has a way of life in harmony with natural resources and the environment, as reflected through local wisdom that is still practiced until the present. This shows that ethnicity is not static. Even though the community has turned to Christianity, but continues to live on the basis of local wisdom. This can be seen in the treatment of ailments that still use local herbs along with modern medicine. Moreover, community resource management is part of life which is lasting from generation to generation. The community still relies on natural water sources such as rivers, streams, creeks, and village water supply for consumption. In addition, villagers continue to collect forest raw and hunt the wild legal animals. Most communities still use firewood as fuel for their daily cooking. Such a way of life corresponds to the concept of ethnoecology (Santasombat, Yot., 2004) describes the relationship between man and nature with an emphasis on understanding the way of thinking and categorizing the natural environment of each group of human beings and resources which directly affect human production and livelihoods within different ecosystems under ever-changing socio-economic and political contexts. This is also consistent with the view of

Srisakorn Walliphodom (2008), who defined cultural ecology as the local relationship in which people of various groups or ethnic groups settled based on the cultural landscape in relation to the settlement of local people. This reflects the fact that natural and man-made environments cannot be separated from each other. In addition, the knowledge of local wisdom on natural resources and environmental management of the Karen community at Ban Mae Ka Piang will be considered through resources, nature, and the environment including soil, water, and forests.

Managing natural resources and the environment, the community focuses on rules, agreements, and people participation based on the belief of “God” even though today’s world has changed with a focus on economic development and growth. Ban Mae Ka Piang community is one of many communities that have converted to Christianity but it was also found that the community still attaches importance to supernatural beliefs that influence their way of life and is considered a form of local wisdom knowledge management as a tool to create a strong and stable community that can coexist with the surrounding nature, including soil, water, and forests. In addition, what has considered a strength of the community is cooperation and awareness of the importance of forest care, such as conservation of resources, not burning forests, not cutting trees, creating firebreaks, demarcating areas, and declaring restricted areas. This includes agreements on community systems and forest resources, such as taking intruders to inform community leaders, reflecting the creation of strong civil society networks to protect natural resources and the environment in a coexistence manner between people and forests. This is consistent with the research by Nopparat Chuangweluwan (2013) who studied people’s participation in the conservation of natural resources and the environment in Sato sub-district, Khao Saming district, Trat province. The Mae Ka-Piang community mostly accepts the relationship model of local wisdom towards natural resources and environmental management which shows that the knowledge is related to “Local wisdom”.

6272



On the issue of natural resources and environmental management in order to create a model community for sustainable development, Mae Ka Piang community creates public participation in the form of a civil society network in preserving natural resources and the environment through local wisdom and traditional beliefs identity. This is consistent with Sanya Sasong's research (2021) on the identity of the Tai-Yai people in order to promote community tourism in Mae Hong Son province using the FICES model to preserve the identity of the Tai-Yai community in Mae Hong Son province.

Suggestions

Policy suggestions

1. Natural resource and environmental management in the community should focus on local wisdom including traditions or rituals in order to effectively manage the knowledge and be mutually beneficial in a sustainable way.

2. The use of local wisdom knowledge for natural resources and environmental management in the community still lacks systems, development mechanisms, and integrated management processes between agencies. There should be cooperation networks to strengthen local government organizations and communities to collaborate in managing natural resources and the environment in the community.

Suggestions for further study

1. An action research model should be used in conjunction with a study on the development of the process of participation in the management of natural resources and the environment in the community with knowledge of local wisdom from people of various ages in order to form a guideline for sustainable development.

2. Researchers may study the model of conservation of local wisdom in natural resources and environmental management in other areas including a comparative study of other ethnic groups as a guideline for sustainable development in the area of conservation and continuation of local wisdom.

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