

*Proceeding of International Conference On Research, Implementation And Education
Of Mathematics And Sciences 2015, Yogyakarta State University, 17-19 May 2015*

B-14

**CONSERVATION OF ENVIRONMENT AND NATURAL RESOURCES BY
PARTICIPATION OF PEOPLE IN PATTANI WATERSHED,
SOUTH THAILAND**

Vichit Rangpan

Yala Rajabhat University, Thailand

Abstracts

This research was subjected to study the level of people participation in environment and natural resource conservation in the Pattani river watershed. Studied issues included model of environment and natural resource conservation, the relationships between participation and environment and natural resource conservation, the impact problem and suggestions from the participating people on environment and natural resources conservation in Pattani river watershed. Research samplers were 2,000 person, and the data were analyzed in terms of frequency, percentage, mean deviation and multiple regressions. There was quality methodology for cross check in this study. The findings were: 1) People Leaders' participation on environment and natural resource conservation was high level, 2) People participation on water conservation was moderate level, 3) Forest and wildlife was moderate level, 4) People's participation on art and cultural conservation was moderate level, 5) Participation of people in treating garbage, mineral and biological resources was moderate level, and 6) There was positive relationship between people's participation in environment and natural resource conservation.

Key words: Conservation, Participation, Pattani Watershed.

INTRODUCTION

Pattani watershed is an important ecosystem and composed of different sub-ecosystems likes Hala Bala forests, whose parts are tropical rainforest, hill evergreen forest, swamp forest and mangrove forest. The freshwater and Brackish water ecosystems are thus sources of biodiversity which are rich in wild plants and animals as well as different species of plants, rattan and birds. As such, study regarding Pattani River and any aspects of its environmental impact and preservation is very important. Because it is an issue of strengthening the participation of community in the Pattani watershed maintenance, and being an important strategy in conservation of natural resources and the environment. Moreover, this strategy has been widely accepted in all institutions and all related organizations. This study will therefore consider community participation in the conservation of natural resources and environment, and determine the forms of conservation, problems and obstacles. Results of this study is expected to be useful for the concerned agencies in defining guidelines for support and promoting more complete operations in the area, as well as in implementing policy setting for community resource and environment in accordance with the ecosystem and living culture of the community, especially for those who reside in Pattani watershed.

RESEARCH METHOD

The instrument of research is questionnaires to study the Sampling group in Pattani Watershed. And examine the questionnaires by expert and experiment (tryout) to find out the reliability of the questionnaires. The sampling group of this research is done by multi silage sampling in 18 communities in Pattani Watershed consists of 2,000 people. The collection of qualitative data is done by deep interview and focus group.

RESULT AND DISCUSSION

Results of Mass Participation in the Conservation of Natural Resources And the Environment. In the aspect of characteristics of the leaders of the surveyed villages where promoting community participation in the conservation of natural resources and the environment was enforced, the score was high for morality, justice, sacrifice, willingness to work for the common good, responsibility, diligence, patience, and listening to the public opinions in the community. Whereas moderate score was the leaders with knowledge and capability, perception in information on promoting community participation in the conservation of natural resources and the environment, Moderate level for all aspects was the issues of perception by getting information from other media such as the Internet, various magazines, and audio line from the community, meeting and communicating with neighbors or acquaintances, reading newspaper, and reading the sign board. For the finding that the use of other media likes audio line as being for the perception of the villagers in Pattani watershed, was often being used mainly as a line in the village opposed to the study of Orathin Seelaporn (2003) who reported that the perception from television viewing scored highest level (91.30%). The finding is in agreement with Kasem Jankeaw (2001)

That study was considered to be the city zone, where getting news was easy. Contrasting to this study, much of information perception was from broadcasting, which was the only perception channel for each of all villages surveyed. Promoting the participation of the community in conservation of natural resources and the environment is in moderate level. Considering the means value in descending order, it was the issue of the knowledge and understanding on the benefits of conservation of natural resources and the environment. Next was the Law concerning the conservation of natural resources and the environment. Meanwhile, the understanding on issue of participation activities in promoting community participation in all aspects relating to the conservation of natural resources and the environment was in the moderate level. Those aspects included the evaluation follow-up, inventing and planning, benefits earning and operations, respectively. It was observed also that the majority of people participated in the follow-up. This was likely due to the result of young people's participation in the follow-up in the area, corresponding to the proposal of Witawas Keliakrathong (1998), who reported that local organizations were likely being the target setter by participating in the decision analysis, operation and making evaluation of their own. Regarding water conservation, it was found that issues of participation in water conservation, and participation in the conservation of natural resources and the environment, their score was in moderate level. Considering the means value in descending order, the first was the regulation setting, followed by the setting of activities, proposing operation guidelines and sharing of ideas, respectively. The finding is in agreement with Snigdha Chakrabarti *et al* (2009). The participation in bringing the plan to actions of participating in the conservation of natural resources and the environment scored moderate in all aspects.

Considering the means value in descending order, it was found that setting of regulation was the first, and followed by the setting of activities, operation guidelines, and sharing ideas, respectively. Participation in the getting benefit was in high level. The finding is in agreement

with Kurian Joseph (2006) That is, as a source of revenue and the 4-living factors, followed by being a source of water for use of household and community. Whereas the benefit getting in moderate level was creating popularity for the community and standing second was the issue of more unity observed among people. Next were sharing activities, being place for recreation and relaxing. Participation in water conservation in aspects of monitoring and evaluating with all aspects scored moderate. Those included monitoring of water conservation or water resource in continuity, giving opportunities to assess the water conservation activities, and to evaluate the activity of water conservation as well as to become the monitoring board of water and water resources, respectively. The finding is in agreement with Veronica Blette (2008). It was further found that participation in benefit getting at high level score was consistent with the study of Pattaranan Kleunkheow (2014) who studied the participation of local residents in management of community forest in Udonthanee province, and found that people engagement was high level in aspects of getting benefits from the community forest as a source of natural food. The local residents were expecting community to be a source of materials use in a residential building.

Regarding the conservation of forests and wildlife, results were in moderate level in the issues of participation in the conservation of forests and wildlife, in planning and decision making. Considering the means value in descending order, it was the meeting for planning stood first, and followed by express of comment, setting of activities and regulations, respectively. The finding is in agreement with Kasem Jankeaw (2000).

Participation in the conservation of forests and wildlife. For the issue of participation in the conservation of forests and wildlife, the score was in moderate level in all aspects of planning and decisions. Considering the means value in descending order, stood first was meeting and planning, followed by the express of comment, setting of activities and regulations, respectively. Issues in participation of forest and wildlife conservation scored moderate level in all aspects of getting benefits. Considering the means value in descending, stood first was a resource for consumption and other uses, followed by a source of income and the 4-living factors, increased community unity as a result of working on activities together, a place for tourism and recreation, and creating popularity to the community. The finding is in agreement with Kasem Jankeaw (2000) respectively. Moderate level score was observed in all aspects of monitoring and evaluation in relation to issue of participation in forest and wildlife conservation. When means value was taken into account in descending order, results showed that helping in monitoring to ensure the forest and wildlife conservation stood first, and followed by aspect of giving an opportunity to monitor and assess the activities, be a member of the monitor board for forests and wildlife conservation, respectively. It was noted that the issue of conservation has resulted in participation in moderate level in all cases of planning, decisions, bringing plan to action, getting benefit as well as monitoring and assessment, and signified that the public participation was not to that much. The finding is in agreement with David Benson *et al* (2014).

Conservation is considered as direct and indirect means for prevention and protection of natural resources and the environment. Most cultures of the community are often tied to the nature, trees, water resources, and wildlife. This relationship may not be clearly visible to the city community. Pattani watershed community is mostly nature-dependent communities. However, the role of culture is lack of database or people are lack of basic knowledge in culture. Pattani local wisdom is related with food, crafts, medicine, art performing, occupations, housing, and clothing. Factors that encourage such wisdom are 3 factors; 1) the nature condition of the local area, 2) initiative and local resources, and 3) religious beliefs. Belief in Brahman, Buddhist, and Islam of local villagers together with the local initiative and natural resources

leads to the wisdom development of folk medicine. The finding is in agreement with Kasem Jankeaw (2000).

Participation in solid waste disposal. Regarding the issues of participation in solid waste disposal, the score level was moderate in aspects of the planning and decision, bringing the plan into action, getting benefit, monitoring and evaluation. Also study of the participation in solid waste disposal found that the people in Pattani watershed participated in just moderate level. This was likely to be caused by the getting of knowledge and awareness about waste were not much as they should coinciding with report from Mali Jantasuntorn (2002) who studied the public behavior and opinion on waste disposal and separation in the municipality of Uttaradit, and subsequently indicated that it came from cooking and eating, despite there were bins located in the front and back of residential home. Household waste was of wet garbage. Most waste disposal was done without a waste container in the home. This was coincident with that of Wetchamont (2007), who studied the community Solid waste management with community participate in Nongsoog sub-district , Mookdahan province ,and found that involvement community leaders in solid waste management resulted increase of respondents from moderate to high level. There were differences in term of following the method of waste separation and waste management and littering behavior as well as media for learning about waste separation. Consequently, it had not made the public having opinion on the implementation of the waste separation.

Participation in the Conservation of Geological Resources (soil, rocks, minerals, marble). For the issue of plan implementation, moderate level was the result. Considering the means value in descending order, stood first was the participation of conservation activities, and followed by participating in activity informing, in fund donation for operation, making limit line for geological resources conservation area, and as coordinator with other agencies, respectively. Also moderate level score was those of participating in the geological resource conservation in all aspects of getting benefits. Considering the means in descending order, geological resources for families stood first, followed by income and 4-living factor sources, increased unity of villagers from conservation activities, a place for recreation, and creating popularity for the community, respectively. Furthermore, in the field of monitoring and evaluation, all aspects were in moderate level. Considering the average value in descending order, the first was providing an opportunity to monitor the geological resource conservation, and followed by helping to ensure the continuity of geological resource conservation, providing an opportunity to monitor and assess the activities, and be the board member of geological resource conservation, respectively. The finding is in agreement with Komgrit Janchum *et al* , (2015) : Adnan Ozdemir. (2009) For all aspects in monitoring and evaluation, moderate was the score level. Considering the average value in descending order, the first was provision of the opportunity to examine the operation of geological resource conservation, followed by assisting to monitor for ensuring the continuity of geological resource conservation, providing opportunity to monitor and evaluation of geological resource conservation, and be the board member of geological resource conservation, respectively. This study was found consistent with that of Vichit Rangpan (2006) who studied the use of biological resources in Pattani watershed. Such study found continuously providing an opportunity for public to participate in every steps of the conservation process, participation in resource conservation, making plan and decision, all stood moderate are level. Considering the average value in descending order, the first was participating meeting and planning, followed by expressing opinion, setting activities and regulations, respectively. For issues of implementing plan into action in participation of resource conservation, all aspects were in moderate level. Considering the average value in descending order, operation in conserving biological resources stood first, and followed by publicizing the activities, and joined capital donation for operation, making area limiting line for biological resource conservation, and being coordinator with other agencies, respectively.

Participation in resource conservation in terms of getting benefits, it was found that all aspects were in moderate level. Considering the average value in descending order, the first was being the resource for consumption of households, and followed by being the source of income and the 4-living factors, increased unity of the communities as a result of joined operation of activities, being places for tourism and recreation and creating popularity to the communities, respectively. The issue of participation in resource conservation in case of monitoring and evaluation, all aspects scored moderate level. Considering the average values in descending order, stood first was providing an opportunity to inspect the activity operation, and followed by providing an opportunity for the monitoring and evaluating operation of activities, joining the monitoring board of biodiversity conservation as members, and help to govern the biological resource conservation in continuity, as well. These findings were found consistent with the study of Orathin Seelaporn (2003). In addition, the conservation of environment in the area of Yala Municipality showed that the establishment of committee board to govern the biodiversity conservation area, and to continuous survey and inspection was likely to produce good result for concerned community.

Determining relationship effects between participation in the conservation of natural resources and the environment study of participation in resource conservation by using participating in the conservation of water resources, in the conservation of forests and wildlife, in cultural conservation, in solid waste disposal, in the conservation of resources, and in the conservation of biological resources as the dependent variables and set the 4 factors that promote participation in resource conservation as the predictors. Results showed linear correlation with variable of factors that encourage the participation in conservation, and statistically significant at 0.01 level. The finding is in agreement with Kasem Jankeaw (2000). These were likely to generate predictive equations, and thus to calculate the multiple correlation coefficient in the form of standard and raw scores. Formulation of the multiple regression equation resulted in the weight of importance in the format of standard scores.

Results of qualitative data on water conservation solution at its cause and long-term solution for water issues needs forestation, which is capable of maintaining the ecological balance at its best. Forestation maintains its area with a constant water load. Area that needs reforestation for water conservation should be the upstream area where its water source located. The finding is in agreement with Vichit Rangpan (2008). Water conservation is not mere forestation, but also needs other measures such as digging of large ponds, good management of irrigation systems, good plumbing, and digging drainage ditches. The finding is in agreement with Komgrit Janchum *et al*, (2015).

Due to the lower area is mainly of rice field, water conservation may be different from the upper one. Plumbing and irrigation systems are very important like water resource development. Pattani watershed in the upper, middle and lower areas is mostly shallow. This makes the water detention volume decreased. Water resource development to provide enough and adequate water for consumption is thus necessary to work out. It can be done in several forms including dredging streams, restricting remains of fallen timber in water path, or making more locks to keep water by limiting its flow, i.e. not too fast so much so that may have an impact on its use in dry season. The finding is in agreement with Vichit Rangpan (2008), Komgrit Janchum *et al* (2015)

Conserving water for use is to plan the availability of quality water to be served throughout the season, especially during the dry season.

Regarding the consequences if water is not conserved, publics opine that it causes narrowing plantation area, water overflows its banks, and may destroy crops and trees during flooding. In drought period, it may occur usurpation of water, especially in some of areas where

water are blocked for consumption. For these problems, suggestions are most people do not give much importance to the water conservation as the public never experience severe water shortage. Another suggestion is that to make an understanding of the importance of water resources. Whatever, common effect has to be interested together. Others are to make water conservation as the public and community centers issue, and to set measure in moral and evaluation continuously and efficiently.

Conservation of forests and wildlifemaintaining forests and vegetation is related with water conservation.This is because water conservation preserves trees and forests. The interview indicated that for the conservation of trees and forests, it must at the same time be enforced works in multiple forms. The finding is in agreement with Department of Environment Quality (2004) ; Department of Forestry (1999). According to opinion of the majority of the interviewers, forestation was of importance as means for forest maintenance. In terms of collaboration in the community, all parties, be the public or private sectors have to collaborate in establishing the board to monitor and plant trees and helping with the budget and technical knowledge from the state. In particular examples, parents should set a good example to their children; old people should introduce their children and grandchildren the value of the wood and on how to and not to use trees as efficiently and economically as possible; and to try bringing the wood that has never been exploited and try the wood that has ever used it together. In addition, this also impacts on wildlife extinction and ecosystems of air and water. The major obstacle for this is the people lack of knowledge about forest conservation benefits and value. The publics however see that when trees are of their own, then they can be cut out, and this is considered as their own right to do so. Other suggestions of the interviewers are the view that if this is relied on the people alone, it would be impossible to create the culture of conservation of forests and trees. Private and public sectors are there to pay their support as well. The finding is in agreement withSomyot Thungwa *et al.*,(2000).

Arts and cultural preservation is considered to be either directly or indirectly protection of natural resources and environment. That is, the culture of the major communities, often tied to the nature, trees, water streams, water sources, and wildlife. This relationship may have not clearly seen in the city. Pattani watershed communities are mostly nature-dependent communities. That's why their lives are very much linked with nature and environment. Their culture of housing, house building, huts, worship places or others have the proportion of trees at the most. Most villagers use local materials for building their homes.Whereas in city, house building often uses mostly synthetic materials. It can be noted that the home building culture of the local communities uses the wood in correct proportion of the home and use with cost-effective and economic consideration. In terms of occupation, it is found that there may be a difference between the upper, middle and lower areas of Pattani watershed. The upper area along with the middle area closest to the upper, villagers are mostly rubber plantation,while the lower or middle closest to the middle are rice farming, gardening and a little to moderate of rubber plantation. Farming culture is very much in tune with Pattani watershed communities. The more conservation of agricultural culture, the better natural resources will be conserved and protected. The new generation should therefore learn and inherit the knowledge and wisdom of the older generation so that the culture of healing diseases and familiarizing with various herbs would remain in the communities of Pattani watershed.The finding is in agreement with Kasem jankeaw (2000).

Waste disposal, for reducing waste, Pattani watershed communities with their traditional consumer culture surely effect the reduction of waste. Their waste, if there, is totally biodegradable one, and hence brings benefits back to plants and soil. The finding is in agreement with Komgrit Jamchum *et al.*,(2015). Waste minimization can be easily achieved by the use of packing materials, which are non-foam and non-plastics and even papers, but may be cloth-made bags, weaving bags, in addition to practice of not to pack in foam, plastic or paper

bags at each purchase or giving/receiving. In the present days, many different wastes can be processed into many different products, but must be initially recycled through certain processes. Each home should be able to separate the wastes for reuse. The finding is in agreement with Sunee , M (1997) Certain wastes could be sold. Creating garbage disposal collectors can be done even at household level. It can also be done in the form of incineration, or by digging a hole for waste disposal, and waste is burnt. Burning waste is for those with combustible property. If not, it should be buried. Furthermore, certain communities have create waste disposal bank, which are better for communities as a whole. Constructing an awareness and educating about waste can be done in many ways, i.e. publicizing or advertising directly by adding to the course of instruction and constructing an awareness with religious principles.

Conservation of Geological Resources (soil, rocks, minerals, marble). Soil conservation is soil treatment using any means for the purpose of maintaining soil with capability to support highest and the possible long last productivity. That is, use of soil in correct way to achieve and maintain high products and maintenance its fertility long last, without the soil erosion. The finding is in agreement with Adnan Ozdemir (2009); Ali yalcin and Fikri Bulut (2007). Conservation of soil is very consistent with water and forest conservation as well as constructing an awareness and understanding. In addition, the most important of all is to construct good attitude to the conservation of soil, and maximal use of land. Currently, land decreases as a result of house building, increase of farmland, especially in the upper areas where forests are opened for planting rubber as rubber is expensive. Provision of knowledge and understanding in making realization of land benefits is essential. Parents need to try to implant awareness as much as possible. To do so, people should have been given the budget and planting trees. Campaign for planting trees and other plants are to be done by the government via village headmen or the local administrative organizations. The finding is in agreement with Kasem jankeaw (2000). Everyone has to campaign in helping the conservation. Residents of each family have to pass their conservation land as well as soil of publics. However, a major drawback of soil conservation is essentially the lack of good consciousness and lack of good knowledge and understanding of the impact resulted from neglecting good care of land.

Conservation of biological Resource includes fish, plants, wildlife, birds, insects, and so on. As a human, help should solve the problem of the loss of biological resources. For instances, breeding rare species of plant, animals, and other livings, campaign not to water lives, and wild animals in the breeding season, not to destroy the biological resources like breeding ponds or water resources around the houses, not to damage water habitat of other animals, which are food sources of larger animals, i.e. cycles in the ecosystem. The finding is in agreement with Kasem jankeaw (2000) ; Department of forestry (1999). In addition, the finding showed that the public needs to educate about conserving biological resources.

CONCLUSION AND SUGGESTION

This research was subjected to study the level of people participation in environment and natural resource conservation in the Pattani river watershed. Studied issues included model of environment and natural resource conservation, the relationships between participation and environment and natural resource conservation, the impact problem and suggestions from the participating people on environment and natural resources conservation in Pattani river watershed. The findings were: 1) People Leaders' participation on environment and natural resource conservation was high level, 2) People participation on water conservation was moderate level, 3) Forest and wildlife was moderate level, 4) People's participation on art and cultural conservation was moderate level, 5) Participation of people in treating garbage, mineral

and biological resources was moderate level, and 6) There was positive relationship between people's participation in environment and natural resource conservation.

REFERENCES

- Department of Forestry. (1999) *Managing the Community Forests*: Bangkok: Department of Forestry, Ministry of Agriculture and Agricultural cooperatives. Bangkok Thailand.
- Department of Environmental Quality. (2004) *Preliminary information of Pattani watershed* . Bangkok Thailand.
- Witawas Keliathanong. (1998). *Participation of People in the Management of Water Resources, case studies of Pak Panang district*, Nakhornsrithammarat Province., Bangkok
- Orathin Seelaporn. (2003). *The Study of Environmental Conservation Behaviors of Yala Municipality Communities*. Yala Rajabhat University, Yala.
- Snigdha Chakrabarti , Amita Majumder , Subhendu Chakrabarti (2009). *Public-community participation in Household Waste Management in India: An operational approach* . journal homepage: www.eisevier.com/locate/habitatint.
- Kurian Joseph , *Stakeholder Participation for Sustainable Waste Management*. www.eisevier.com/locate/habitatint.
- Pattharanan Kleunkiaow. (1994). *Participation of Local People in Forest Management in Udornthanee Province*. Khon Kaen University. Khon Kaen.
- Drinking water public right-know requirements in the United States , (2008) E-mail: bllette.veronica@epa.gov.
- Mali Jantharasuntorn. (2002). *Behavior and View of People in Waste Disposal and separation in Uttaradit Municipality*. Kasetsart University, Bangkok.
- Vichit Rangpan.(2006). *Environment and Development*. Yala: Yala Rajabhat University, Yala.
- Winai Thiannoiy.(1999). *Management of Natural Resources*. Bangkok: Aksorn Wattana Publisher.
- Adnan Ozdemir. (2009). *Landslide susceptibility mapping of vicinity of Yaka Landslide (Gelendost, Turkey) using conditional probability approach in GIS*. Environ Geol. 47: 1675 – 1686
- Ali Yalcin and fikri Bulut. (2007). *Landslide susceptibility mapping using GIS and digital Photogrammetric techniques: A Case Study from Ardesen (NE-Turkey)*.
- David Benson, Oliver Fritsch, Hadirian Cook, Marylise Schmid, (2014) *Evaluating participation in WFD river Basin Management in England and Wales: Processes, communities, outputs/outcomes*. Journal homepage: www.elsevier.com/locate/landusepol
- Wetchamont, S.(2007) *Solid Waste Management by Community Participation in the Sub-district Administration of District Nongsong*. Mukdahan Province. Mahasarakham University.
- Komgrit Janchum, Vichit Rueangpan, Sunit Rojanasuwan, Sompong Phetborisut and Sitthichai kulsri .(2015) *Application of Geographic Information System (GIS) for Landslide Hazard Assessment* Yala Province.
- Sunee, M (1997.) *Effective Solid Waste Management: Socio-Economical Patterns and Standards, Mangement and law for Soluition of Community Issues*. Environmental Research State. 22 (1): 5-51