

Water Management by Participation of People in Pattani watershed Case Study of Yupo Community, Yala Province, South Thailand

Vichit Rangpan^{1,a}, Ekkasit Grajanglikit², Pradub Nuanlaong³, Saudee Maprasit⁴, Rachada Boonkaew⁵, Mahamah Ariyu⁶, Rusueman Awangoh⁷, Lakkhana Akhunsada⁸, Nuttiya Yod-ied⁹, Pattaraporn Choopan¹⁰, Arunee Animah¹¹, Nurfirhana Kana¹², Sorasak Leesen¹³

¹⁻¹² *Yala Rajabhat University, Yala 95000, Thailand*

¹³ *Yala Technical College, Yala 95000, Thailand*

^aVichit39@gmail.com

Abstract. Research studied water using in location and conflict in Yupo community mueang district (YCMD); to study participation of water resources management (WRM) in YCMD. Results showed. 1(Campaign of used water-saving to educate. Operational activities of the plan had positive related. Social factors on WRM conflict that people not involved in WRM. There were shared water resources, which has positive related. Social factors on conflicts of WRM by catchment upstream to downstream villages had inadequate water for the operational activities had positive related. 2(Social factors correlated to the participation of WRM in YCMD in high level, R^2 equal to 0.416 and various factors independent variables; income, education and land was correlated participation of WRM in YCMD in high level, R^2 equal to 0.052, 0.01 R^2 equal to 0.076 and, R^2 equal to 0.093.

1. Introduction

Water management was the basic necessity of living and economic, social development of the country. When considering the increasing needed of various water use sectors. That was due to the increase in population and economic and social growth, while the amount of water resources was still limited and there was a tendency to increase in many regions. Due to the amount of water available, some parts cannot be used, because the water quality was inappropriate and sent environmental impact. In other words, the development of water resources was not consistent with the demand [1]. Thus was causing water shortages during the dry season and flood problems, in the rainy season and polluted water which these days were increasing every year. Water resource management depended on many factors, both controllable and uncontrollable, such as the amount of potential water resources. The amount of water demanded in various areas to meet the increasing population economic and social development as well as restrictions on water quality. And the impact due to other related resources all those who were involved must be considered, because water was the origin of all living things, and was the driving force of development that never stops. It was the integrity of the landscape paying attention to water. It was the urgency of every region, every province, every province and every country in this world. The government provided support in building understanding with local authorities and communities. And consider the suitability fit in the management of both current

conditions which will have to look further into the future. The main reason for having water resources managed and continuous support and support, seeking cooperation from all sectors, focusing on households, communities and networks. The regard to fairness in sharing benefits in view of the importance was poverty and lack of opportunity to access important resources that were the production factor. Promotion of participation from all stakeholders must be transparent and reliable in every step, efforts to strengthen and empower communities by seeking academic and other help. All sectors in governance management exchanged of ideas, creative practices that were consistent with the conditions of that particular ecosystem. Point and tell the importance of water was reflecting in the community life plan to drive the sustainable development strategy, to affect the efforts to reduce poverty, promote quality of life. The resource managing was suitable for the environment. The goal was to develop integrated water resource management. Plans to increase water efficiency must seek cooperation from relevant agencies regarding water stakeholders and relevant civil society organizations to participate in every step, seeking scientific research agencies. In forecasting and monitor the water cycle, reduce losses in the water delivery system and water used measures. In order to meet the water cost effectively using new technology that was environmentally friendly. Therefore, need to have a sustainable water management and increased water use efficiency in the agricultural sector. Irrigation system was expansion participates in the restoration and improvement of existing water structures cost-effective harvesting of water. Growing plants used less water, resistant to drought seeking water storage in appropriate form corrections to prevent water pollution for health. The environment and protect the landscape must be aware of the traditional wisdom of water. It was study the impact of upstream community activities on all water cycles by seeking cooperation, exchanging knowledge from the community, educational institution for proper water management, value and longevity]2[. Yupo sub-district was located in Mueang Yala district. Most of the area was Pattani watershed. In the past, people used water for agriculture that was abundantly adequate according to the season. At the present, it was economic development and increasing number of people in the area make land use more and more. Changing the terrain and climate change rain was not seasonal. People in the Yupo Sub-district still had problems with water resources]3[. The farming area becomes deserted due to the lack of water in farming. Including it was the construction of a water barrier wall of Yala municipality causing the amount of water that had ever flowed into Yala municipality. The change the direction of flow into the Yupo district, multiplying, causing the Yupo Sub-district became a water receiving area during the flooding. On the other side, the construction of the new Yala-Pattani road has become a water barrier, slow drainage period of flooding for a long time causing damage to agricultural areas and fruit plantations. Therefore, in order to prevent and alleviate such problems, it was accelerated the campaign for people in the Yupo Sub-district to become interested in the problem and find a solution in the long term by allowing all sectors to participate in the management seriously. From the above situation It was seen that there was a need to create guidelines and plans for water resource management to achieve efficiency and effectiveness to meet the needs of the population in each area of the Ban Yupo community. This research was looking at the overall water problem, by studying the participation in water resources management, water allocation systems and conflicts in water use. In order to analysed and found effective policies and guidelines for water management.

2. Methods

Population used in this research study was the head of the household that lives in Yupo Sub-district, Mueang district, Yala province, which has 6 villages, number of households, 1,224 households]4[. It was study from house number according to the polling station of Yupo Sub-district. The sample group in the study selected the sample group. The researcher was divided into 2 groups: community leaders / religious leaders and people who lived in Yupo sub-district, muang district, Yala province, 10 people who were a single sample group. The sample consisted of 301 households and leaders or family heads as sample groups. This study randomly selected simple random sampling. Calculate the sample size]5[who was equivalent to 301 households. The researcher used the

questionnaire, was a tool to gather information from the head of the household or the family leader as a sample group by dividing the structure of the questionnaire into 4 parts as follows. Part 1 was a question about the personal factors of the respondents, including gender, age, education level, marital status, number of household members, income, occupation, duration of residence in the district, arable land and the distance between accommodation and water resources. Part 2 was a question about social factor information, by dividing the question into 5 topics, namely, information perception factor. There were 5 questions, knowledge and understanding about water resources. There were 6 questions, training. There were 3 questions, water allocation had 7 questions, water management conflicts. There were 8 questions, including 29 questions and requires respondents to agree or disagree. Part 3 was a question about participation in water resources management, by dividing. The questions were into 5 topics, including problem determination, causes and solutions. There were 4 questions, expectations of benefits. There were 4 questions to choose from, and plan to develop problems. There were 4 questions in the operation in the planned development activities. There were 6 questions, evaluation of development activities. There were 4 questions, consisting of 22 questions and requiring respondents to agree or disagree. Part 4 was a question about problems and suggestions for participation in water management in Yupo sub-district, Muang district, Yala province, which was an open question. Statistics used in data analysis, the collected questionnaires were analyzed by using computer program to find descriptive statistic statistics including frequency distribution. Percentage in general data analysis of samples determined the mean and standard deviation in the analysis of the level of participation of people in the community of Yupo sub-district, Muang district, Yala province. The test was the relationship using statistics, stepwise multiple regression analysis.

3. Results and Discussion

The study can be presented in a table and explained as follows.

Table 1 Correlation values between personal factors and participation in water management of the Yupo sub-district, Muang district, Yala province

Personal factors	Participation in water management	
Income per month	$R^2=0.052$	0.228**

** There was a statistically significant relationship at the level of 0.01.

Table 2 Correlation values between personal factors and participation in water management of the Yupo sub-district, Muang district, Yala province

Personal factors	Participation in water management	
Arable land Businesses located in Yupo Subdistrict	$R^2=0.044$	0.209**

** There was a statistically significant relationship at the level of 0.01

Table 3 Correlation values between personal factors and participation in water management of the Yupo sub-district, Muang district, Yala province

Personal factors	Participation in water management	
Education level	$R^2=0.044$	0.162**

** There was a statistically significant relationship at the level of 0.01

Table 4 Correlation values between social factors and participation in water management of communities in Yupo Sub-district, Mueang District, Yala Province

Personal factors	Participation in water management	
Social factors	$R^2=0.418$	0.647**

** There was a statistically significant relationship at the level of 0.01

Social factors related to information perception found that most of the sample groups, there was a high level of perception of information perception (62.10%), perception of low level information perception (37.9%). Because the sample group has been able to get information on various channels such as radio, television, telephone which had a correlation with participation in water resource management regarding problem determination. cause and positive solution (0.228) and statistically significant at 0.01 level, $R^2 = 0.052$. The second part of the internet communication system in the community was used. There was a correlation with the participation in water resources management regarding problem determination, cause and solution, both positive (0.356) and statistically significant at 0.01 level, $R^2 = 0.127$. The public relations of water resources activities, with many agencies, both public and private sectors, had a correlation with the participation in water resource management regarding problem determination cause and solution both positive (0.393) and statistically significant at 0.01 level, $R^2 = 0.154$. The results of the research can be seen that the social factors related to the perception of information in the sample group are mostly perceived by the news. The multi-channel and thorough, resulting in a relationship, participation in water resource management, about problem determination, the causes and solutions and the use of another internet system to receive information and publicize water resources activities. In addition, social factors regarding the awareness of information was also related to participation in expectations for benefits, relationships and understanding about water resources which more than half of the sample groups have received training in knowledge about water resources from the public and private sectors, able to recognize and understand water allocation guidelines and the importance of water allocation. The interview study, it was found that most people have conflicts in water management, regarding the water storage of the upstream villages that caused the downstream villages to have insufficient water. The water management conflict about the dredging of sediment in the Pattani watershed caused the people to be dissatisfied because of the bank erosion. It can be seen that the public was aware of the news as well. There was training on water resources knowledge. As a result, people will have a better understanding of the use of water resources and water allocation in the present and in the future. And can reduce conflicts that can occur. Which was consistent with the research of [6], conducting a feasibility study of community groundwater resource management model, participation in Chiang Mai municipality. Personal factors regarding monthly income showed that most of the sample groups had participation in decision making and planning to develop problems. Which has a positive correlation with the participation (0.184) and statistically significant at 0.01 level, $R^2 = 0.034$. Social factors were regarding the awareness of information about news sources with participation, decision making and planning, development, problem solving. Which had a relationship with positive participation (0.227) and statistically significant at 0.01 level, $R^2 = 0.052$. The social factors related to the awareness of information about the internet communication system in the community and participation in decision making and planning, development, problem solving, which had a relationship with positive participation (0.405) and statistically significant at 0.01 level, $R^2 = 0.164$. The social factors were regarding the awareness of information about public relations, water resource activities and participation in decision making and planning for development, problem solving, which had a relationship with positive participation (0.397) and statistically significant at 0.01 level, $R^2 = 0.157$, the social cognitive factors water resources about the use of water resources projects, and participation in decision making and planning for development of solutions to problems that had a positive relationship with participation (0.365) and statistically significant at 0.01 level, $R^2 = 0.133$. The social factors related to knowledge and understanding of water resources about prevention and problem solving of water resources and participation in decision making and planning,

development, problem solving, which had a relationship with positive participation (0.364) and statistically significant at 0.01 level, $R^2 = 0.133$. The social factors related to knowledge and understanding of water resources regarding the inheritance of local wisdom in solving water resources problems with participation in decision making and planning, development of solutions to problems which have a relationship with positive participation (0.311) and statistically significant at 0.01 level, $R^2 = 0.097$, the social cognitive factors water resources about systematic planning of water resources and participation in decision making and planning, development, problem solving, which had a relationship with positive participation (0.369) and statistically significant at 0.01 level, $R^2 = 0.136$. The social factors were the training on water resources education for communities and participation in decision making and planning for development of solutions to problems which had a positive correlation with participation (0.351) and statistically significant at 0.01 level, $R^2 = 0.123$. The social factors were the training about the need for training and participation in decision making and planning, development of problems that had a positive relationship with participation (0.243) and statistically significant at Extinguish 0.01, $R^2 = 0.059$. The social factors were water management conflicts with no network of water users causing conflicts in water allocation and participation, decision-making and planning, development of solutions that had the value of relationships with positive participation (0.225) and statistically significant at 0.01 level, $R^2 = 0.051$. The social factors were water management conflicts regarding water retention during the dry season, upstream village water catchment causes the downstream villages to have insufficient water to participate in decision making and planning to develop valuable problems, relationship with positive participation (0.212) and statistically significant at 0.01 level, $R^2 = 0.045$. The results of the battle, found that most of the sample groups, personal factors, income and social factors regarding information perception about news sources were related to participation in decision-making and planning to develop problems. It can be seen that people with an average monthly income of 6,200 baht had the opportunity to participate and had the time to listen to information, and had the time to participate. In accordance with the theory of seduction of]7[the conflict in the operation must have the art of creating interest in the subject that will spread the lull, especially on the needs of people according to the theory. Maslow, who called hierarchy of need from ascending. The personal factors concerning the perception of news about public relations, water resource activities and participation in decision making and planning, development, problem solving, and relationships with were factors of participation in water resource management regarding problem determination, causes and solutions. The sample group had knowledge and understanding of the information received, and can participate in the process of water resources management and participate in decision-making, systematic problem solving as well as being able to plan water resources development using local wisdom. The social factors related to receiving training to educate the community and participation in the implementation of planned development activities. There was a relationship with public participation in the exchange of knowledge in the use, maintenance and participation in the implementation of planned development activities. It can be seen that the public is aware of the training causing the participation, exchange ideas leading to sustainable development. Consistent with the theory the concept of the approach to public participation management of]8[has divided the approach of participation in the three main areas: public participation and public sector. Personal factors regarding monthly income showed that most of the sample groups had participation in evaluation of development activities, which had a relationship with positive participation (0.184) and had a statistically significant level of 0.01. $R^2 = 0.034$. The personal factors related to other professions with participation, evaluation of development activities which had a relationship with positive participation (0.229) and had statistical significance at 0.01 level, $R^2 = 0.052$. The personal factors were about the land for eating in the Yupo sub-district and the participation in the evaluation of development activities, which had a relationship with positive participation (0.150) and statistically significant at 0.01 level, $R^2 = 0.023$. The social factors were perception of various information in the community such as radio, television, telephone and participation, evaluation of development activities which had a positive relationship with participation (0.190) and have statistical significance at the level 0.01 $R^2 = 0.036$. The social factors were

information awareness, public relations, water resource activities and participation, evaluation of development activities which had a relationship with positive participation (0.336) and had statistical significance at 0.01 level, $R^2 = 0.113$. The social factors were knowledge and understanding about utilization of water resources projects and participation, evaluation of development activities which had a relationship with positive participation (0.343) and statistically significant at 0.01 level, $R^2 = 0.117$. The social factors were knowledge and understanding about prevention and problem solving of water resources and participation, evaluation of development activities which had a relationship with positive participation (0.309) and statistically significant at 0.01 level, $R^2 = 0.095$. The social factors were knowledge and understanding about local wisdom inheritance and participation, evaluation of development activities which had a positive correlation with the participation (0.272) and statistically significant at 0.01 level, $R^2 = 0.07$. The social factors were relating to receiving training to educate the community and participation, evaluation of development activities which had a positive relationship with participation (0.296) and statistically significant at the level 0.01 $R^2 = 0.088$. The social factors were relating to receiving training for water resource training needs from various organizational units and participation, evaluation of development activities which had a positive relationship with participation (0.235) and statistically significant at level 0.01. $R^2 = 0.055$. The social factors were concerning the training on knowledge exchange in the use, maintenance and participation, evaluation of development activities which had a positive relationship with participation (0.277) and statistically significant at 0.01 level, $R^2 = 0.076$. The social factors related to conflict in water management of the watershed village, keeping water, causing the downstream villages to have insufficient water and participation, evaluation of development activities which had a positive relationship with participation (0.306) and statistically significant at level 0.01. $R^2 = 0.094$. The results showed that personal factors related to income and occupation, including land belonging to Yupo sub-district and social factors, awareness of information, public relations, knowledge and understanding of water resources, utilization water resources project, succession of local wisdom, training for the community, knowledge exchange on water resources and conflict management of water resources in relation to the participation evaluation. Development activities that correspond to [9] have said that participation is divided into 5 steps as follows: thinking, Planning, co-operation, evaluation of participation and benefit sharing.

4. Conclusion

The campaign of used water-saving to educate, operational activities of the plan had positive related. The social factors on water resources management conflict that people not involved in water resources management, there were shared water resources, which has positive related. The Social factors on conflicts of water resources management by catchment upstream to downstream villages had inadequate water for the operational activities had positive related. The social factors correlated to the participation of water resources management in Yupo community mueang district in high level, R^2 equal to 0.416. And the various factors independent variables; income, education and land was correlated participation of water resources management in Yupo community mueang district in high level, R^2 equal to 0.052, 0.01 R^2 equal to 0.076 and, R^2 equal to 0.093.

5. References

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