

# The Strategy of Watershed Area Community Management on Flood Disaster Prevention and Solution

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## ABSTRACT

The research objective of the strategy of watershed area community management on flood disaster prevention and solution was to synthesize a strategic plan to prevent and solve flooding problems in the middle of the water area and a community solution to prevent and solve flood problems. This research used the applied research methodology between quantitative research using survey research from questionnaires. The qualitative research collected data from in-depth interviews from key informants and focus group discussions was used to develop a strategic plan for community management in the area of strategic water with the prevention and resolution of flood problems. Research findings showed that the strategy of watershed area community management on flood disaster prevention and solution that will lead to the formulation of plans, namely, preparation strategies, flood prevention strategy, flood management strategy, strategic remedy strategy and strategies for sustainable solutions in order to meet the goals set forth in both the development dimension for sustainability, efficiency dimension in resource management, dimension of quality of flood management and the effectiveness dimension of driving while operating in an emergency which must be driven by 16 strategic plans, 84 missions and 35 indicators of success in order the public, so this for the people, community leaders, networks partners, department of government, private sector networks and public charity organizations in the area integrated together to achieve the objectives and goals as specified.

## Keywords

Strategy, Community, Management, Prevention

Article Received: 10 August 2020, Revised: 25 October 2020, Accepted: 18 November 2020

## Introduction

From the past to the present, Thailand has experienced several severe floods and the value of the damage each year from billions to tens of millions. The statistics for the past 20 years from 1992-2012, Thailand has been damaged by floods. The total value of 1.7 trillion baht. The year that suffered the most is the year 2011 with more than 12 million people affected. The World Bank estimates the damage as high as 1.44 trillion baht and classified as a disaster that causes a lot of damage. The fourth largest in the world (National Disaster Prevention and Mitigation Committee: 2011), followed by 2010 worth 16,338 million baht, 2002 worth 13,385 million baht and 2000 worth 10,032 million baht, with damage covering both life and property. Property such as people in distress and deaths, government buildings, temples, schools, commercial buildings and private homes, as well as agricultural and livestock areas were damaged [1]

For Nakhon Sawan Province, the Nakhon Sawan Disaster Prevention and Mitigation Office has summarized the damage of Nakhon Sawan Province from the Great Flood 2011 (Special Flood Prevention and Response Center, Nakhon Sawan Province: 2011) [2] found that there are disaster areas. From the floods in 15 provinces, 123 sub-districts, 9 municipalities, 1,244 villages, divided into areas affected by floods, 5 sub-districts, 45 sub-districts, 580 villages, flood-affected areas, 10 districts, 78 sub-districts, 664 villages, 75 urban communities, 113,099 households. 356,012 people were affected, 91 people were killed, 112,219 houses were flooded, 105 schools, 190 temples, 45 public health facilities, 62 roads and more were damaged. In 13 districts, 903,400 rai were severely damaged. Livestock, fisheries have also been affected. In addition, the Nakhon

Sawan Chamber of Commerce also assesses the value of economic damage (Nakhon Sawan Chamber of Commerce: 2011), [3] especially in the commercial and industrial sectors that there are shops, companies, stores and industrial plants. Get lost No less than 6,000 people were affected by the floods, valued at more than 9,000 million baht, divided into assets and professional tools, including the submerged inventory sector, while in the industrial sector, machinery and goods were damaged. Damage also includes damage from business opportunities that will require a period of physical recovery and build trust with countless customers and partners.

Prevention and solution of floods after the catastrophic floods in 2015. Integration, provision, supply of water sources or monkey cheeks, layout of the city plan, construction of concrete walls, protection of water in the economic zone, transportation system that does not. Obstruction of waterways, dredging of canals or rivers, or even diversion of waters across the watershed that people are trying to think of doing now is a new option for the previous government to decide to recover. Investments will be made while reforestation, increasing forest area, preventing further deforestation, including the construction of weirs in forest areas for water management. Keeping water available throughout the year is another way to help solve the problem of global warming. Another way to get attention to support, promote, rarely have tangible results, including the aim of creating a plan to prevent, remedy and rehabilitate the state of mind. At present, there is no systematic drive, and in the past, most of the activities were carried out in the form of straw fires, there was no continuity, and no network of organizations was formed in the form of volunteer groups or Public Psychology Group.

Therefore, strategies to prevent and solve flood problems to find a solution for the community from the process of preparation, prevention management or response to disaster recovery and sustainable solutions. In order to obtain a strategic framework for the management of floods or crises that will guide the prevention and solution of floods to communities in the middle of the water to be strong, ready and a strong community. Sustainability and self-help as has happened in the past, the research team is interested in studying research in the above research plan.

### Research Objectives

The research objective of the strategy of watershed area community management on flood disaster prevention and solution was to synthesize a strategic plan to prevent and solve flooding problems in the middle of the water area and a community solution to prevent and solve flood problems.

### Research Method

This research uses Applied Research methodology using quantitative research by survey research from the questionnaire to study the problems and conditions of community management from the past to the present in a sample of 1,592 samples. The analyzed statistical data was synthesized as a framework for qualitative research by collecting data from in-depth interviews with key informants representing the public. The results of the study were developed into a strategic model for community management and presented to the focus group discussion with a group of qualified experts of 54 experts in focus group discussion to analyze and synthesize to find common conclusions to develop a strategic plan for strategic management of the mid-water community with the prevention and solution of floods.

### Research Conceptual Framework

In the research study on " The Strategy of Watershed Area Community Management on Flood Disaster Prevention and Solution", the research team organized the conceptual framework expressed in the nature of the study process and method, as well as the results from the study as follows:

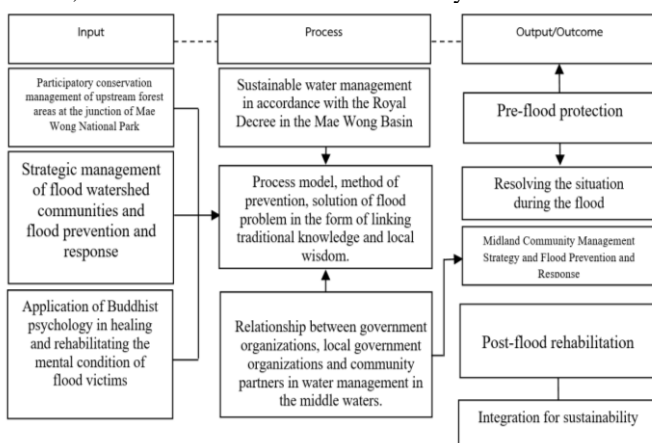


Fig. 1 Conceptual Framework

### Results

Strategic plan to prevent and solve floods in the middle of the river can be divided into 5 major strategies, including strategies for preparation (Preparation) strategies for flood prevention (Prevention) strategies for flood management (Response) strategies for Recovery and strategy to solve sustainable problems (Sustainable) and have set goals for action from the dimension of development for sustainability (Sustainable Building) dimension of efficiency in the management of resources dimension. The quality of flood management (Serve the Flood) and the dimension of effectiveness in driving operations in the event of an emergency flood (Run the Crisis Management) through 16 strategic plans, 84 mission issues and 35 key success indicators for people, communities, relevant government departments and the private sector integrate together to achieve the objectives and goals.

### Discussions

The results of the research study on the strategy of community management in the middle of the river and the prevention and solution of floods are consistent with the research study on the management of the Chao Phraya Basin in 2016 and the guidelines for flood mitigation by dredging the Chao Phraya River "(Department of Irrigation, 2011) [4] found that the management of the Chao Phraya Basin during the dry season is more than solving the problem and mitigating the damage from the flood in case of flooding and flooding into the agricultural area and community because the Chao Phraya River has sand in the basin. This is an important obstacle to water, so it should be dredged and improved to increase drainage efficiency and reduce the duration of the upper flood to reduce. This is in line with the research study "Best Practices on Flood Prevention, Protection and Mitigation" (United Nations and Economic Commission for Europe (UN / ECE): 2002) [5] which found that flood forecasting and warning were required timely planning and operation at all levels in a systematic manner and ongoing training to deal with damage from water problems. Floods during operations should create unity in solving problems, and after the flood, it should be a standard compensation system and based on the basic economic conditions of the country, which is consistent with. The results of the research on strategic management of the mid-water community showed that the prevention and solution of floods in the area of Nakhon Sawan Province were found both in terms of survey research and from the collection of information and facts using in-depth interviews from key Informants who are the people and stakeholders in the midland community. At the same time, the strategy of community management in the middle of the river and the prevention and solution of floods, if you look at the form and method of management throughout the solution will be different from the concept of "flood management in a case study of The Netherlands" (Peeraya Chuwattiyakorn: 2011) [6] found that the Delta works project, which is a project to build dams and river gates of the Rhine-Scheldt to prevent sea problems. The central water area in Nakhon Sawan province is facing floods due to floods from the upper North, especially from

the three major rivers, namely Ping, Wang Yom and Nan rivers. The area of Nakhon Sawan, which is the source of the Chao Phraya River, and if it rains more than usual every year, a huge amount of water will flood many communities in Nakhon Sawan for months, which is different from the case of the Netherlands. Floods or floods caused by high seawater problems make the solution is to create a system to prevent or prevent water from flooding the city while Nakhon Sawan. The solution is to make the water drain into the sea as soon as possible or as much as possible.

In terms of the conceptual framework or perspective of the strategy for community management in the middle of the river and the prevention and solution of floods, if considered in depth and delicate, it is consistent with the research results on "sustainable development in Berlin people's lives" (Fuengarun Prididilok: 2012) [7] who found that sustainable development in the way of life of the people of Berlin is a development that focuses on creating a balance in three dimensions: the economy, society and the environment that must be developed in all dimensions. Relationships and interrelationships and are part of being able to change people's behavior in accordance with the natural way. At the same time, it is also in line with the concept from the research results on "Strategies for the development of the Thai economy under natural disasters and Environment" (Songtham Pinto and Chanaporn Seriworawitkul: 2012) [8] found that economic development that may affect the environment and increase the chances of disasters should be planned on the basis of geographical considerations and appropriate allocation of natural resources to prevent negative impacts on the community externalities and also related to the research on "Development of the process of" proactive community planning by the community, (The case of the master plan of the landscape of the municipality of Tambol Prik), Sadao District, Songkhla Province" (Namong Nopketu: 2011) [9]. Community Collective Ownership is the key to driving public policy and improving the environment and quality of life, and is a bottom-up community management process or bottom-up process where the community must jointly study the environment for themselves and then lead to debate, refinement and create a picture of the future of the community together.

In addition, if we look at the form of community management in accordance with the philosophy of sufficiency economy, the research results of the strategy of community management in the middle of the river and the prevention and solution of floods are consistent with the research results. A strong community management model is based on the philosophy of sufficiency economy in the upper central provinces "(Wittaya Chandaeng and Chanong Adiattanasit: 2013) [10] found that in building a strong community, what is important is to promote the participation, knowledge management and learning of people in the community by providing support in the form of tripartite, including community organizations, government organizations, partner organizations to create guidelines for community rehabilitation, adaptation guidelines. Community and guidelines for the survival of the community, which is not different from the research on "Lessons from the Tsunami to the Great Flood crisis 2016" (Nantiya Thongkhanarak: 2012) [11] found that in the prevention and correction in the crisis will lead to the

unification of the public and private sectors to help each other more in the form of natural birth, no order, the use of individual knowledge and expertise to help support. At the same time, it is a lesson for people in the community to stand up together, save, rehabilitate and deal with the crisis with strength together in the future.

At the same time, the strategy of community management in the middle of the river and the prevention and solution of floods, if analyzed according to the principles of Buddhism, it will be found that when human morality affects the environment and the environment is inseparable from human actions, human beings and systems. Ecology is a network of human actions, the impact on the environment with power, human greed, chaos and injustice are creeping into human life (Manop Nukkarnrean: 2003) [12] and in line with the views of Buddhadatta Bhikkhu towards nature (Thaweewat Puntarikwiat: 1995) [13] who found that pure nature is an example of a pure society, the solar system coexists without disturbing each other, all life in the universe is inseparable, has sufficient natural productivity. Only a life of justice in society will occur when people return to a state of natural balance. People have the right to use only certain resources as necessary. People must learn to share the excess with others, know how to consume less resources and should be cultivated for all people in society should know how to control their difficulties and greed and in line with research studies on "the development of ethics for the environment. With the process of creating a future together" (Rungthip Klahan: 2007) [14] found that the monks have made efforts to promote the production of repetitive mental innovations to solve complex social problems and strengthen social organization by using the cultural costs of society to integrate with the concept of Buddhist principles for the development of society. However, the work of the monks is independent and varies according to the situation in the area, which is different from the work of the state by encouraging people in the community to unite in the community for mutual learning through practice, with the goal of earning a living and being self-sufficient, generous to each other, and learning together. Respect and generosity to each other to create knowledge and increase knowledge to support each other. Creating opportunities for learning with a sense of responsibility is rather than concern at high and hidden in the society to create value and value for coexistence, which is to cultivate the strength of the community by integrating the concept of participation for development, and improving the quality of life under the context of the community.

The strategy of community management in the middle of the river and the prevention and solution of floods are also in line with the research on "Guidelines for increasing agricultural efficiency through the participation of communities using the Mae Sab Reservoir, Samoeng Tai Subdistrict, Samoeng District, Chiang Mai" (Dechrat Pintana and others: 2012) [15] and found that the people are involved in surveying the area to see the cost of the meeting to set the rules, there are penalties for violating the rules and activities through the news tower. Coordination with the government is monitored by the Committee for the Control of Religious Principles and Beliefs for the purpose of forest conservation philanthropy. There is a committee of local government organizations as a consultant to promote

simplicity and unity. It is also consistent with the research on "participatory community forest management model of the community of Tambon Pan, Muang Pan, Amphoe Mueang Pan, Lampang Province" (Prayoosak Buathet and others: 2010) [16] found that the process of managing the use of forest regulations. Jointly organize forest traditions such as forest ordination, forest destiny, community forest management in other forms, such as fire protection to prevent forest fires, construction of dams. Forest learning, local firefighting, local learning process, and the addition of knowledge from the model community. Bamboo forest firefighting volunteers have been established in their own community forest areas to motivate nearby communities to receive support from the community, public and private agencies form a community forest network.

The strategy of community management in the middle of the river and the prevention and solution of floods are also related with the research on "Forms and methods of cultural rehabilitation, beliefs in community forest management, Pink Sub-district, Pink District, Khon Kaen Province", [17] which found that the expansion of the temple's sanctuary, the ordination ceremony of the forest to restore the belief in the ghost of Pu Pu Ta, Don Pu Ta area to be a conservation area for the elderly to restore the cemetery and the prohibition to designate it as a ritual forest. Knowledge to children and in line with research on "reliance on forest resources of the people in the buffer zone of the Huai Kha Khaeng Wildlife Sanctuary" (Sura Sastra: 2000) [18] found that the products from the forest that most people collect are bamboo shoots, wild mushrooms, wild vegetables, and forest products. People's forests include total household expenditure, size of holding area, duration of settlement, ethnicity and number of household workers, and are in line with the research on "Creating social cooperation in the conservation of forest and water resources in the sub-shoulder area, Nan, Wiangsa District, Nan Province"(Nanthamit Nantasen and colleagues: 2002) [19]. It was found that the sub-district of Lai Nan has conserved forest and water resources, both in reproduction and redevelopment, such as landscaping, expansion of conservation areas, development of social rules, development of conservation areas as tourist attractions, development of management, promotion and protection of forest and water resources, development of public communication and public relations, development of mindfulness or mental health. Community spirit integrates into local curricula using social processes or public forums, leading the formation of public policy, the application of local beliefs and traditions, the praise of good deeds, the linking of community relations with the community or other organizations, the application of social rules, community participation until the community forest conservation and fish conservation.

### Body Of Knowledge From Research

From the strategic plan to prevent and solve floods in the middle of the river, which can be divided into 5 important strategies, including strategies for preparation (Preparation), strategies for flood prevention (Prevention), strategies for flood management (Response), Recovery and strategy to solve sustainable problems (Sustainable) and have set goals

for action from the dimension of development for sustainability (Sustainable Building) dimension of efficiency in the management of resources (Management Resources) dimension. The quality of flood management (Serve the Flood) and the dimension of effectiveness in driving operations in the event of an emergency flood (Run the Crisis Management) through 16 strategies, 84 mission issues and 35 key success indicators. Therefore, it is for the people, communities, relevant government departments and the private sector to integrate together and will lead to the achievement of the objectives and goals as defined in the details summarized in the Fig. 2 as follows.

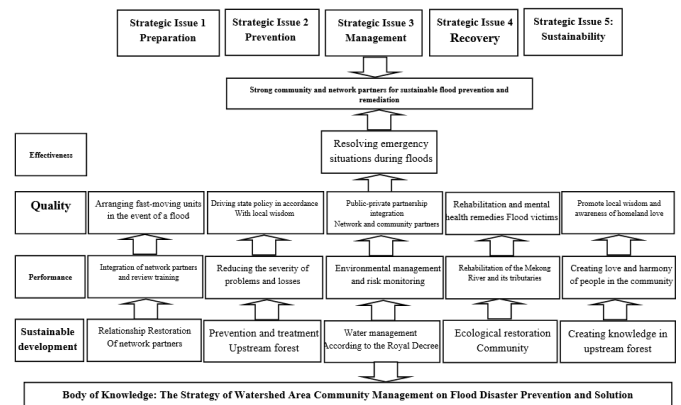


Fig. 2 Body of knowledge from research

## Recommendations

### A. Recommendations for Policy

- 1) A review of management in the form of a formal organization or a vertical organization and then applied to a more horizontal organization management.
- 2) Establishing collaborations and networks to manage community issues on the basis of intimacy, either in the form of kinship, community or network community
- 3) The state must give importance and support to promote lifelong learning for sustainable solutions.

### B. Recommendations for future research

1. The strategy of community management in the middle of the river should be studied and the prevention and solution of flood problems in the strategic issues in the preparation before the flood in the middle of the water.
2. Water management should be studied in accordance with the Royal Decree on the basis of understanding, access and development, as well as coexistence with nature.

## Conclusion

A study on the strategy of watershed area community management on flood disaster prevention and solution found that it is a proactive or strategic management system. There should be an infrastructure system for crisis management in terms of the system, information system, situation monitoring, surveillance and alarm system, communication system, supply system, equipment, tools and emergency



transportation, public relations system, information dissemination system, development system to promote and encourage the potential of individuals, families, groups, organizations, community agencies, people, networking and monitoring and evaluation systems. The preparation of learning exchange plans needs the creation of the core, the formation of public policy, the application of local beliefs and traditions and the connection of community relations with other communities or organizations, the application of social rules, and community participation. Community forest conservation is also prepared for the strategy of community management in the middle of the area and the prevention and solution of floods to meet the set objectives.

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