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Community public policy process for solving cadmium contamination problems in the environment: A case study of Mae Sod district, Tak province



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ABSTRACT

The aim of this qualitative research was to study the community public policy process for solving environmental problems that affect the lifestyle of community members. Mae Sod district, Tak province, Thailand was selected to be a case study. The research question was what public policy process does the community have for solving cadmium contamination problems in the environment? Qualitative research methods were applied among 14 network members and stakeholders on policy movement. Data were collected for this study using the snowball sampling technique, in-depth interviews, and nonparticipating observations. The data selection method and content analysis were applied.

The result of this study showed the community had processes to drive public policy in solving environmental problems involving cadmium contamination through using legal action. The five steps were: forming groups of affected people, issuing plans and procedures for the movement, searching for networks, communicating and expanding knowledge, and issuing public policy proposals through the administrative court. The community public policy process was successful as the administrative court declaration resulted in the affected area being placed under environmental protection, and the related administrative agencies were required to resolve the problems causing the adverse effects on the community and its lifestyle. Therefore, the application of the policy or the direction of development by the Government should consider the after effects including the environment, society, and health of the people. An assessment must be made of a policy's effect before a decision is made to go forward with the policy. Therefore, good public policy should derive its developmental basis from the community or its members as it will sustain the policy impact on the community.

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Introduction

Community Contexts

The Mae Tao Canal area before it converges with the Meuy River is an important factor in the lifestyle of those

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people living in Mae Tao, Mae Guu, and Pra Tat Phadang subdistricts. In the past, the Karen were the first group of people to settle in the area with their own beliefs and history. Later, Thai Northern Natives migrated from Teon District, Lampang province to escape the drought, resulting in two ethnicities, namely, the Karen and the Thai Northern Natives. They settled in the Mae Tao area because of the richness of the watershed area and started rice farming and animal husbandry as their main sources of income.

Changes in the Mae Tao watershed area started December 23, 1980 when the Ministerial Council approved the establishment of a private enterprise for the concession of zinc mining with the core distribution in Thailand and the residual production exported. The company was registered April 10, 1981 with an initial investment capital of THB 20 million and a 25-year zinc mining concession at Moo 5, Phra Tat Padang sub-district, Mae Sod district, Tak province, covering an area of 40 ha with an estimated zinc silicate reserve of 4.5 million t. It maintained an average output of approximately 28% pure zinc to provide to smelters with a capacity to continuously produce 60,000 t of zinc bars yearly for 16 years (Padang Industry Company Limited, 1978).

Problem Origin: Destiny of Mae Tao People

In 2003, cadmium contamination was reported in the newspaper and became a concern for people living in the Mae Tao watershed area. EMI, a non-government environmental organization, reported the environmental situation in the Mae Tao agricultural area where soil and water contaminated with cadmium was having adverse effects on farm produce and the local food chain (Inmoung, 2008). Freshwater animals were contaminated at a high rate of cadmium that was harmful to health, and consumption was prohibited. People did not know what cadmium was or even how the contamination affected them. The change in the environment became noticeable from the change in the water color. With the concession area being upstream, rain would wash mining sediments into the river. The effect became even more noticeable when available water became unusable even to the Karen people in the village located upstream. The people affected by the private enterprise formed a group called, "Farmers and Users of Mae Tao Water", under the assumption that their environment had been changed by the zinc mine.

The private sector detected cadmium contamination in the environment and the pollution was reported in the newspaper. Local government and civil society were alerted to solve the problem affecting the people and the community based on two parameters: 1) solving the health and environmental impact issues among the farmers; and 2) ceasing rice farming and other crop cultivation in the watershed area and as compensation for the loss of this profitable crop, the government would support sugar cane, rubber and teak trees and *Jatropha curcas*, to produce ethanol. In 2004, the government ordered the burning of all rice and crops produced in that farming season, and compensated the farmers for their economic loss continuously for 4 years (2004–2007) (Janya, 2008).

In 2004, the Health Department conducted a health survey and screened people living in the Mae Tao and Mae

Guu subdistricts. Urine and blood tests on people aged 15 years and older were conducted to screen for cadmium contamination. Individuals, with higher than standard levels (0.5 mg) of cadmium in their urine, were enrolled in a cadmium patient group in the Cadmium Clinic at Mae Sod Hospital. They were classified using a patient green card for checkup treatment and follow-ups. Symptoms in patients became more noticeable and included arthralgia, ostalgia and other conditions. The mortality rate increased among green card patients and etiologic agents were suspected among those patients. When the number of cadmium patients continued to increase, a representative was sent to request assistance from private enterprise. Health care funding for cadmium-affected people was then offered. The offer was accepted in the form of a Health Savings Fund managed by the Health Department with community participation in the management and processing of the funds. However, the Fund did not really address the problem.

The problem with compensation for farmers started to appear in 2007. A resolution and an announcement from the government to cancel the compensation to the group of farmers created more confusion within the group because no answer was provided as to the safety from cadmium contaminant in the environment. At the same time, profitable crops introduced by the government created more debt for the farmers causing them to form a group to demand compensation and effective solutions to the problem caused by private enterprise.

Some of the group members, the Karen or PgazK'Nyau, the ethnic group from Phratatpadaeng subdistrict, Mae Sod district, Tak province, had been affected by the copper mining industry. Cadmium contaminates, found in soil, rice and other crops in amounts toxic to the body, affected the health of people in the ethnic communities. As a consequence, claims were made to compensate for the impact and management of the environment. Ultimately, this created the development of a substantial healthy public policy in this area by considering the effect on the environment and importance of health. The group was able to negotiate with government agencies to deal with the problem and the impact caused by the state developmental policy by giving more attention to the impact on lifestyle and health resulting in compensation to those affected by the impact of the developmental process.

This time, public demonstrations were used to put pressure on the government. This had no success nor did it cause any change but rather, created further division among farmers. One group supported cost-effective crop cultivation while others advocated rice farming as before. When the government stopped assisting without providing any clarification regarding the issue of cadmium contamination, the farmers were left to fend for themselves. A group of those affected by cadmium contamination was created to demand the right to live safely using the social movement to drive change in the government policy and to let the government solve the issue of cadmium contamination in the environment (National Human Rights Commission of Thailand, 2006).

Public policy involves a social process or has its origin in the foundation of the community and the community's social networking. It drives procedures for the learning

process to empower and create regulations or public policies that affect proceedings at the community level (Ketsuwan, 2007). The community determines public policy in this dimension showing that the movements of people in local communities are building their social lifestyle and enabling them to manage public life by themselves as society members.

Objective

This research aimed to study the community public policy process including public policy procedures, factors related to public policy, and the effect of the policy on the community and its members.

Literature Review

Academics have given several dimensions to the meaning of public policy, according to each person's objective and method of study and this can be separated in two different processes: public policy in line with the government process and public policies in the dimension of processes in the public sector/society. This study only focused on the public policy in the dimension of process in the public sector/society.

Public Policies in the Dimension of Processes in the Public Sector/Society

Any announcements made by the government or activities under the government's policies are generally understood as public policies, when in fact public policies come into effect through the different sections of society and without having to be officially announced by the government (Sookkamnerd, 2002). Public policy can be defined as the directions or guidelines which the overall society sees or believes should be followed. The said direction may be initiated by the government, the public sector, or by the people. Therefore, the meaning of public policy covers a broad sphere including government's policy, parliament legislations, policy created by the local administration, and operations by the public and private sectors.

Ketsomboon and Sujariyagul (2003) defined public policy as the directions or guidelines that the overall society sees or believes should be taken, including policies written down by the government.

In each society, public policies are created continually and not only are policies created by political parties, government policies, or from ministries and other government departments but they are also created constantly by the people, the public sector, the private sector, and by society. The meaning of the public sector in this context not only covers policies written down or determined by the government but also "the direction or guide that the overall society sees or believes should be the direction in which actions should be taken". The heart of public policy, as given in these definitions, shows that it does not lie in creating announcements or in writing regulations but lies in the "process" of actions taken to bring about the public policy (Jindawathana, Archanuphap, & Phiphatrojanakamon, 2009). The process should involve the participation of all concerned to share

information and knowledge, determine the policy direction and to participate in, monitor, and review those policies so continual improvements can be made. Wasee (2009) stated that a good public policy should comprise the three factors described below.

1. The intelligence process involves the use of facts that have been well analyzed and synthesized so that they become "knowledge" and this is called 'knowledge-based policy formulation'.
2. The society process occurs when policy has a powerful effect on the society and those who will be affected by it, such as the society becomes involved so that its members can learn more about the issues and also determine the policy. This is an open and transparent process, as stipulated in the 2007 Constitution, Article 67, stating that the people should be involved in the policy-making process.
3. The spiritual process implies ideals should be present in the public policy-making process to ensure righteousness for all so that no hidden benefits exist for any particular groups of people.

Public policy has had both positive and negative impacts on all society sectors. The Thai public policy process (Wasee, 2007) aims to benefit the population by improving the local quality of life. The federal government has decentralized the network sectors' authority on developing population health policy following the constitution of 1997 and the Health Act of 2007.

The development of public policy has changed the model of the policy process due to technology, democracy, and social movements. Public policy made and implemented by the state or government sectors has produced negative impacts on the population lifestyle and quality of life because it has not involved a participatory process. Decentralized local government and the civil sector can manage the role of specifying the direction of public policy development. That is the bottom up model involving the participation process of local organizations and community sectors. It motivates community members to protect their rights and community resources for sustainable development (Wannabowon, 2009). A community-based public policy model provides strengthened policies with a significant base of sustainable developments.

Today, the evolution of public policy has changed, in line with the system of democratic governance. The public policy process has moved from the state-determined process to one in which people and society have more involvement and roles in setting the policy direction to reduce the negative effects of the former process where the state or those with state authority set the direction (Pintoptang, 2012). The transition is to a process wherein the policy is formulated through actions by society or has more involvement by the public sector. Simultaneously, when the policy is proposed by the government sector, the process would involve extensive discussions, studies, and assessments conducted to see how it would affect the environment. These assessments are called Environmental Impact, Social Impact and Health Impact Assessments (Kem, Parry, & Palmer, 2004).

The process of determining public policy and its implementation is characterized by communication with people in the affected communities and how they manage their own lifestyles. They seek to create a better society and better quality of life, which are the dynamics within the public territory, rather than having technical experts analyze the policies or mobilize groups of people to push the government to issue and implement policies for the betterment of people in society. The view of public policy in this dimension gives a picture of the movement of people in the local community who are expanding their existence in society and are vigorously managing their public lifestyles.

The researcher applied the system and process models (Dye, 1992) in an initial model to correspond to the guidelines for community public policy development that have a developmental foundation from the actions of the public/society. The researcher focused on the policy process, factors related to public policy, and the effect of the policy on the community and its members (Hill, 1997). The research framework of the case study on community public policy process for solving cadmium contamination problems in the environment at Mae Sod district, Tak province can be summarized as shown in Figure 1.

Methods

Research Participants

The watershed farmer network in the Mae Tao Canal area, whose purpose was to solve environmental contamination and related health issues, was included in this study. The 14 participants were divided in 5 groups: 2 public policy movement leaders, 3 technicians or learning process workers in the local area and from other regions with related interests, 2 private development organizations, 4 people living in the affected area, and 3 stakeholders. The 14 participants were selected using the snowball technique to reveal the phenomena, problems, experiences, and opinions related to public policy process.

Data Collection

This qualitative research applied structural interviews, while participant observation was applied to observe

participant behavior, including body language, in group meetings or community forums where the researcher was a participant. Nonparticipation observation was used to study the community contexts and some outside group activities were conducted where the researcher was the only observer, and field notes were used to collect data. Data were collected using qualitative approaches. In-depth interviews, using semi-structured questions, were conducted to explain community contexts, the development of public policy, the successful factors of the public policy process, and the changes in public policy. In this study, the researcher determined the main language for the interview to be “Kummuang”, a native language of the participant groups to communicate with outsiders and create more familiarity than the official Thai language.

Data Analysis

Content analysis was the core method used to analyze the data. Similar meanings were analyzed and grouped for the process format and the format was grouped for process correlation and the policy movement process. To further increase the credibility and validity of the results, the researcher employed triangulation methods to analyze data as explained below. Data sources were triangulated using evidence from different types of data sources, such as primary and secondary data or interviews, documents, public records, photographs, and observations. Methodology triangulation combined multiple methods to gather data such as document, interviews and observations when conducting the primary research, at different times and places. Lastly, theory triangulation used more than one theoretical approach or more than one public policy model to interpret and support data (Nontapattamadul, 2011).

The researcher obtained research ethical clearance from the Social Sciences and Humanities Ethics Committee, Mahidol University. The researcher used ethical considerations and followed human ethical research guidelines by linking all participants voluntarily to this research, without any direct or indirect force, pressure, persuasion, language use or verbal force in respect to participants. The participants signed informed consent forms, so that the researcher carefully avoided any negative effects by protecting the participants' confidentiality and privacy using

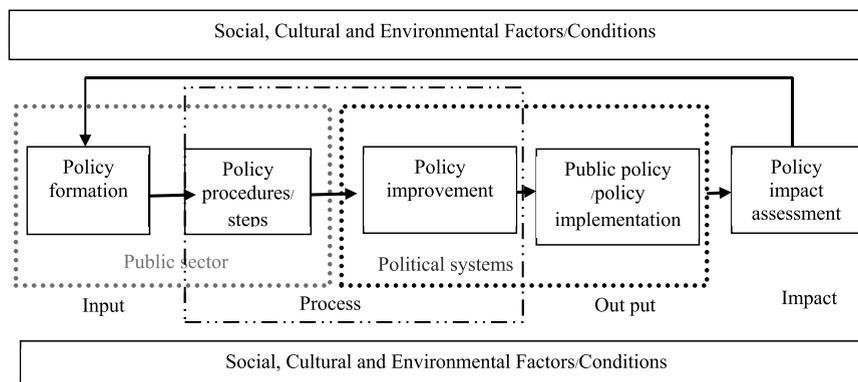


Figure 1 Research conceptual framework

pseudonyms or job positions in place of the participants' real names.

Results

Public Policy Procedure

Due to the severity of the problem and the adverse effect on the community, the policy movement process comprised volunteers from the Chamber of Lawyers and the academic sector. Empirical data and legal measures for the movement of the public policy process were used as presented below.

Impacted Group Forming

The cadmium-contaminated environment in the Mae Tao watershed area had been affecting people's health and the way of life for many years. Compensation and problem management by the government was not effective. In addition, the corporate social responsibility of the private enterprise that assisted the Health Care Fund and infrastructure development budgets, and the unbiased conduct of local government officials resulted in some members leaving the group. The group was left with only 36 people with the mission to solve the problem and improve society. Most members held the same position regarding environmental management to return the area to its original agricultural routines and be compensated for the loss of income due to cadmium contamination resulting from loss of opportunity.

Policy Issue Formulation and Procedure

Because of the small size of the group and the experience in making compensation demands from the government, from 2004 to 2007, the processes of issuing policy and creating developmental procedure were discussed within the group's network. Agreement from the discussion was put into practical resolutions and determined the group's movement through legal measures for the purpose of improving and solving problems in the community with the main focus on environmental and community remedies in terms of the economy and health care.

Search for a Network

After formulating the policy and outlining directions for the group, the farmer network in the Mae Tao Canal watershed area proceeded to manage and progress the movement by themselves. During the first research period and while collecting data on impacts, the demand for compensation in paper form resulted in failure. They later searched for a group of networks to be their mentor and to help drive the issues concerning the group's movement. With the help of community members and through liaison among network leaders, they began to cooperate with volunteers from the lawyer group, who provided an important role regarding the legal dimension of the movement. Similarly, other academic networks started studying the problems and effects on the community's environment. They related and shared academic data and the knowledge of various network in facilities such as Naresuan University, the Bureau of Disease Control Region

9 Phitsanulok Province and the National Health Foundation (NHF).

Communication and Knowledge Building

The network had an informal communication process and did not provide a clear role using one communicator. Communication of news and of the group's network movement was conducted informally similar to communication among people in the area. Communication to the public about the group's activities and movement relied on the group leader's ability to communicate among civil society and through academic fora to exchange and share knowledge. In addition, because cadmium contamination in the environment was a hot issue, it provided opportunity for the mass media to produce documentaries and present community grievances on television, in environmental journals, and on the internet, giving more channels to publicize and communicate, thus expanding public knowledge and awareness.

Policy Issue Proposal

Policy proposal by the watershed farmer network in the Mae Tao Canal area relied upon the legislative process as a core strategy for its movement. The legislative requirements concerning contaminated environment solutions and compensation to affected community members were submitted to the administrative and civil courts for rulings. The administrative court decided to have related government offices solve the community environment and health problems by reporting the procedure and guidelines for problem solving within 20 days. The declaration of public policy was a success for the group. The steps in the public policy process are summarized below and illustrated in Figure 2.

Factors Relating to the Policy Process

Movement Strategy

The core movement strategy was the use of legal techniques comprising facts and evidence and the search for empirical data. The capacity building and learning processes were significant because they assisted members in comprehending the effect of the public policy process movement altogether. As mentioned by one participant:

"When the movement process began, we had a belief and concern about members learning, how to update learning when situations changed, and how to change an abstract emotion to a sentimental loss feeling".

The use of research data and knowledge from associated networks were applied to collect data for the policy process. Findings from research field work and scientific surveys and presentations of the results disseminated knowledge about environmental and food contamination to community members. The information was considered reliable and useful to be referenced in the movement process. As was mentioned:

"Findings from social science research must indicate and make clear the impact of cadmium contamination on social and human loss".

Experience and knowledge sharing among networks created the opportunity for group members to learn about

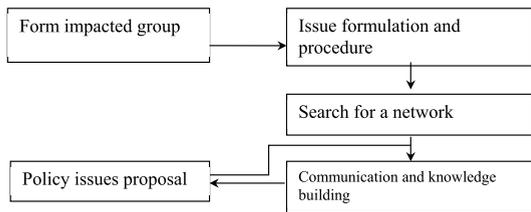


Figure 2 Diagram of the steps in public policy process

other related issues such as knowledge about cadmium contamination, problem solving using the experimental technique, and trial and error practice in using rice with a short growth cycle to reduce cadmium absorption.

Strengths

Kinship and goal setting: The history of the community has shown that the ancestors of the current community migrated from the same area. The relation of kinship and the feeling of camaraderie unified the community, creating a culture of mutual respect. Moreover, the influence of the Thai Northern culture of respect for elders resulted in harmonious relations in the group. The most significant issue was that they had the same goal to improve the community, uniting them and making them successful.

Strength of the leader: The group leader was the key person in the communication process who was honored and respected by members of the group. It was noticed that the leader had clear leadership abilities and characteristics. The person was observed to be well informed and a seeker of knowledge. The leader was able to interpret academic language, understand legal and civil issues, and communicate in their native tongue to group members helping them understand the situations that resulted in camaraderie and the sharing of opinions. One reinforcing factor was the leader's background in being from the Karen ethnic group with experience in social inequality and a lack of social justice. The leader's experience in working with NGOs and government offices expanded his network, which supported the leader in directing the movement. As mentioned by their stakeholders:

"... It must be accepted that a leader has the capacity and strength in the group."

Academic network and NGOs in environmental field: The watershed farmer network in the Mae Tao Canal area had various academic allies such as the Mae Sod Civil Community Organization that supported learning processes and civil society activities. At first, academic allies included The Bureau of Disease Control Region 9 Phitsanulok Province and the NHF. Naresuan University supported knowledge sharing from cadmium studies including how cadmium had contaminated the environment and its impact on health and the environment, NGOs, namely, the Nlaw group, advised on public policy process movement and another important group in the drive on public policy process comprised the lawyer volunteers. They helped manage data and legal issues. Finally, the Human Rights Group also assisted in civil rights protection. *"The strength was that they had lawyers as a coach"* was mentioned by a civil society worker.

Unique cultural and cobelief model: Culture related to tradition or based on rice farming practices was considered to be significant and at the heart of the group. It was supported by the viewpoint that tradition builds morals and encourages rice farming that had disappeared through the invasion of cadmium contamination. Furthermore, local wisdom taught through story-telling and games created unity within the community.

Public Policy Outcome

Change in the initial stage of the movement process relied mainly on legal strategies. The network group members shared knowledge in the change process both internally and externally regardless of the geographical area such as the Mae Toa Canal area, where researchers and developers came to study and to find ways to solve the problem of many agricultural groups. Researchers and developers created a learning process and experience for the members. As mentioned by one lawyer volunteer:

"Using the judicial process as the arbitrator in legislating ministerial regulations is a way to protect the environment in the Mae Toa watershed area".

Effect of Public Policy: In-Process Outcome

The educational network set up a community curriculum and learning process for integration in local school programs for students and their parents to understand and reduce risk behavior from food contamination in the community. Classroom research was one method to improve and develop a curriculum and research methods for primary school children. In secondary school these activities were integrated in science subjects. Science students undertook science projects, for example, the successful and valuable science student project entitled, "Decrease cadmium quantity in nature" gained top prize as the winner in the national student science project competition, and expanded the experimental results to the community.

Environmental researchers under the Princess Sirindhorn Royal Project studied the quantity of cadmium contamination in soil, water, and rice sown on farms. Simultaneously, the civil society network supported short growth-cycle rice species with low cadmium absorption to the group. However the weather or the geography of the area proved unsuitable. Nonetheless, this was one of the important facts learned by group members and their colleagues.

Clarity among the people and their network was derived from the knowledge and understanding of the effect of cadmium on the environment and its health impact that was learned from direct and shared experiences with the academic network, including knowledge of civil rights and law. The group forming process created a network of interdependence. As attested by a group leader:

"... When we form a group, we depend on one another ... One benefit was that people were able to learn about public law and make use of it. Public law gave benefits to the movement of the community in problem solving. It was

a benefit to the people and to the future where judgment can be made and no social sin will be committed."

After the administrative court declared the area to be under pollution protection and ordered related organizations to be responsible for compensation, the academic sector collaborated with the NHF to study the impact of cadmium contamination on health and the food chain cycle and cooperated with the farmer network in the Mae Tao Canal watershed area to find solutions to the problem. As mentioned by one lawyer:

"The administrative court had the National Environmental Board, and the Ministry of Natural Resources and Environment declare the Mae Tao Canal watershed area an environmental protection area and to have the problems managed and resolved within 20 days (which was too short). After the announcement of the ministerial regulations, the related provincial government sector must have an environmental plan that integrates local protection organization, and is developed in cooperation with the people in making recovery and compensation plans with the least impact. Moreover, meetings with the people in the Mae Tao watershed area were required. People in the community should not only wait for help from the government but they should drive forward together."

The watershed farmer network at Mae Tao Canal had guidelines for continuous movement and development of the group's public policy to increase community awareness of the impact of the developmental process and the impact on the environment and health of the community. This resulted in participatory power in the community and in setting the direction of development in the community. As mentioned by one member:

"I want this case to be a study for learning in other communities in Thailand and to bring about considerable change through state policy"

Discussion

The public policy process of the farmer network in the Mae Tao Canal watershed area was a citizen involvement process in solving problems that affected the community's lifestyle as related by Sookkamnerd (2002) who considered that public policy served as a guideline or social direction. In addition, the overall view held was that it should be followed, meaning that the public policy relied on the procedures (Jindawathana et al., 2009) of the process to be created by the participants from all sectors working and sharing data and knowledge and specifying policy directions. It could be noticed that the policy process of the Mae Tao network comprised a social process with severe problems that had affected the society or the community and lacked attention from the responsible agency. Therefore, the ideal public policy was for the common interest, and not hidden within the group's own self-interest, by relying on the "knowledge and learning process" along with fact finding and the use of empirical evidence combined with legal drive as the main strategy processes. This process has been called knowledge-based policy formulation (Wasee, 2009).

The stages of the policy process began with affected individuals in the community rising up to find ways to solve the problem. They received support from the academic network and the management of the learning process to demand compensation and improvement in the environment of the community through the use of the legal process or the reliance on the power of the law agencies to change the proposal of the people or the community into public policy. Anderson (1984) noted that the processing activity of an individual's wisdom resulted in the emergence of new concepts and new practice guidelines to issue policies such as insecticide control, driver safety, and human rights policies. The concreteness of the public policy process was formed by the community through institutions with legal powers in specifying and announcing public regulations to put into practical use.

Success resulted from the concise settings of public issues and targets which brought about the laying of the framework and activity design and the choice of the movement technique based on available knowledge (Yospanya, 2009). Further, receiving academic support from the policy network helped to encourage the process of the network to be powerful and to be driven based on learning in accordance with Kickbruch, McCann, and Sherborn (2008), who studied public health policy regulations in one state of Australia. It was shown that public policy might have originated from an individual, a community, or an organization by having distinguished a clear policy issue. Additionally, to be mobilized from various societies and participants to help in the drive might use a health assembly or public policy forum that concerned both sides of the issue in the process. In addition, characteristics of a leader can support the movement process by providing clearer directions and reducing the process time (McCaughy & Bruning, 2010). Therefore, a leader's thinking process was a factor in supporting public policy decision making. In this study, the leader was not only the person directly affected but was also a person with developmental characteristics and ideas for community improvement and the protection of citizens' rights. The leader was considered to have a new developmental paradigm and public consciousness (Suwanich, 2008).

Conclusion and Recommendations

The public policy process for the farmer network at Mae Tao Canal started with the community being impacted by their cadmium-contaminated environment which affected their health and lifestyle. The problem was neglected by responsible agencies. Incorporating the affected people in a network could set targets for compensation for the community and recovery of the environment. They gained supporters from volunteer lawyers and related academic organizations. The public policy process consisted of five stages: 1) forming a group of affected people; 2) formulating issues and procedures; 3) searching for networks; 4) communicating and spreading knowledge; and 5) proposing policy through the administrative court. The network applied legal techniques as a core strategy for the process movement to achieve the group's targets. Along with the use of fact finding, empirical and research data were used to build a learning process and to develop members'

potential. The network was supported by academic networks through knowledge sharing in various meetings and forums.

The network had strengths that reinforced their success in the movement process. The strengths included their kinship relationships, unique culture and belief system, similar environmental management goals, and the leader's strength and capacity to be able to direct and push the group forward through the movement process with support and co-operation from the academic network. The success of the movement process was confirmed by the announcement of the administrative court to have the area placed under environmental protection and to have related government agencies manage the problems of the cadmium-contaminated environment.

The administrative court verdict resulted in legal change through the amendment of ministerial regulations. Furthermore, provincial government officials came to resolve the problems of the community. Simultaneously, the local educational sector developed a community curriculum to disseminate knowledge, create awareness of cadmium health risks, and reduce the risk of consumption behavior among students. Moreover an academic agency experimented on short growth-cycle rice farming to reduce the problem of cadmium absorption that affected people's health.

Therefore, public policy based on the community not only reduced the impact of the policy in the community but also strengthened the community in increasing the quality of life. A public policy process should have direction from the societal roots or the community and these facets should have a part in setting the directions of development (Crimson, 2009).

Policy impact assessment, including social environment and health issues, is important and necessary for development. Developmental plans or government policy often affect people in two ways: one group benefits from the policy and another group loses. Every policy will have an effect on the social structure and will differ in its directions, issues, and goals. Future studies should continue to understand that community health and cultural change may be affected by policy implementation and the social change context, and should try to understand the environmental impact on population health through long-term clinical trials or epidemiological research where necessary.

Conflict of Interest

There is no conflict of interest in this article.

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